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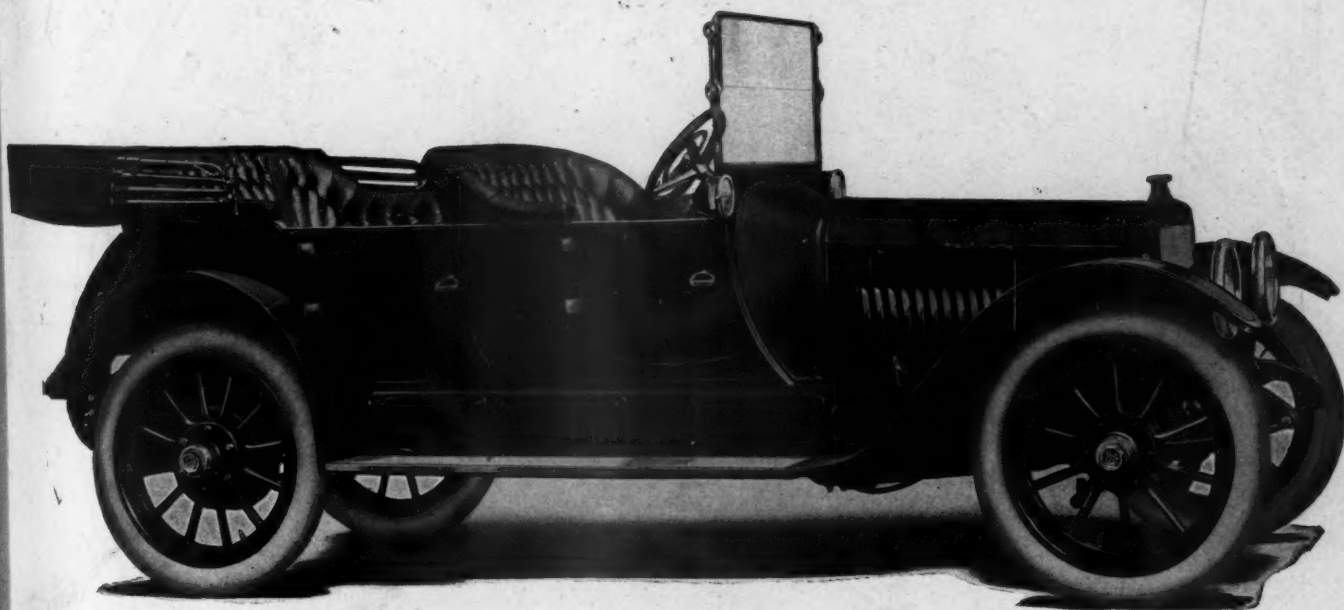
# MOTOR AGE

VOLUME XXII

CHICAGO, OCTOBER 3, 1912

NUMBER 14

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Volume XXII

OCTOBER 3, 1912

No. 14

## Contents

DE PALMA'S NAME GOES ON VANDERBILT CUP.....	5
Mercedes driver wins classic at Milwaukee after Tetzlaff is eliminated—Hughes in Mercer second	
KNOX COMPANY IN HANDS OF RECEIVER.....	10
Springfield concern reports assets of \$2,000,000 and liabilities of \$1,300,000—Receiver also appointed for Ohio Motor Car Co.	
EDITORIAL .....	12
BRUCE-BROWN MEETS DEATH AT MILWAUKEE.....	13
Fiat overturns and driver dies as result of his injuries	
GOODYEAR CONTRIBUTES TO ROAD FUND.....	14
Tire concern will pay over \$300,000 for material for national trail	
HOOSIERS TO CROSS CONTINENT NEXT YEAR.....	15
Indiana manufacturers' tour for 1913 may go to San Francisco	
TRAIL BLAZED AROUND LAKE.....	16
Chicago Motor Club pathfinder discovers it will take 7 days to make 1,107 miles	
TO LAY DENVER-SALT LAKE ROUTE.....	17
Pathfinding party will open up link in transcontinental trail	
ILLINOIS DEMANDS IMPROVED HIGHWAYS.....	18
Meeting at Peoria arouses great enthusiasm over good roads	
CHEAP AMERICAN CAR SCARES BRITISH.....	20
C. W. Steiger, Chicago carbureter manufacturer, talks on European tendencies	
FOREIGNERS DISCUSS HORSEPOWER RATINGS.....	22
England favors retention of present standard, while France will adopt a new one	
ELECTRIC CAR MAKERS HAVE SHOW INNING.....	23
More than sixty machines displayed in Boston exhibition	
1913 MOON LINE FEATURES THREE CHASSIS.....	34
St. Louis concern continues this season's fours, and also brings out a six	
KOECKLIN IS A NEW TWO-CYCLE ENGINE.....	36
Description of two-stroke motor brought out by European designer	

### DEPARTMENTS

Routes and Touring Information	24	In Realm of Commercial Car..	40
Readers' Clearing House.....	28	Among Makers and Dealers....	44
Current Motor Patents.....	32	Development Briefs.....	46
Motor Car Repair Shop.....	33	Brief Business Announcements.	50
From the Four Winds.....	38	Mathematics of Motoring.....	54



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# MOTOR AGE

## DePalma's Name Goes on Vanderbilt Cup

*Mercedes Driver Defeats Hughes in Mercer by 43.3 Seconds in Classic at Milwaukee, Averaging 68.9 Miles an Hour—Tetzlaff, Leading for Twenty-Six Laps, Breaks Jackshaft—No Accidents Mar Sport*



**MILWAUKEE, Wis., Oct. 2**—Special telegram—Ralph de Palma in a Mercedes car won the eighth annual Vanderbilt cup race over the Wauwatosa course here this afternoon at an average speed of 68.9 miles per hour, defeating Hughes in the Mercer Special by the narrow margin of 43.3 seconds. Wishart in a Mercedes came in third.

### De Palma Hoodooed No Longer

By his winning of the classic today, de Palma proved that he had effectually broken the hoodoo that had pursued him so persistently until the Elgin races last August. In fact it seemed that the jinx had descended upon Tetzlaff today for the Californian, after holding the lead from the start for the first 200 miles of the 300-mile race, was put out with a broken driveshaft when victory was almost in sight, much in the same way that de Palma lost the 500-mile race at Indianapolis last Memorial day. De Palma drove conserva-

DE PALMA, VANDERBILT WINNER, AND PREVIOUS WINNERS OF THE CLASSIC

By Darwin S. Hatch

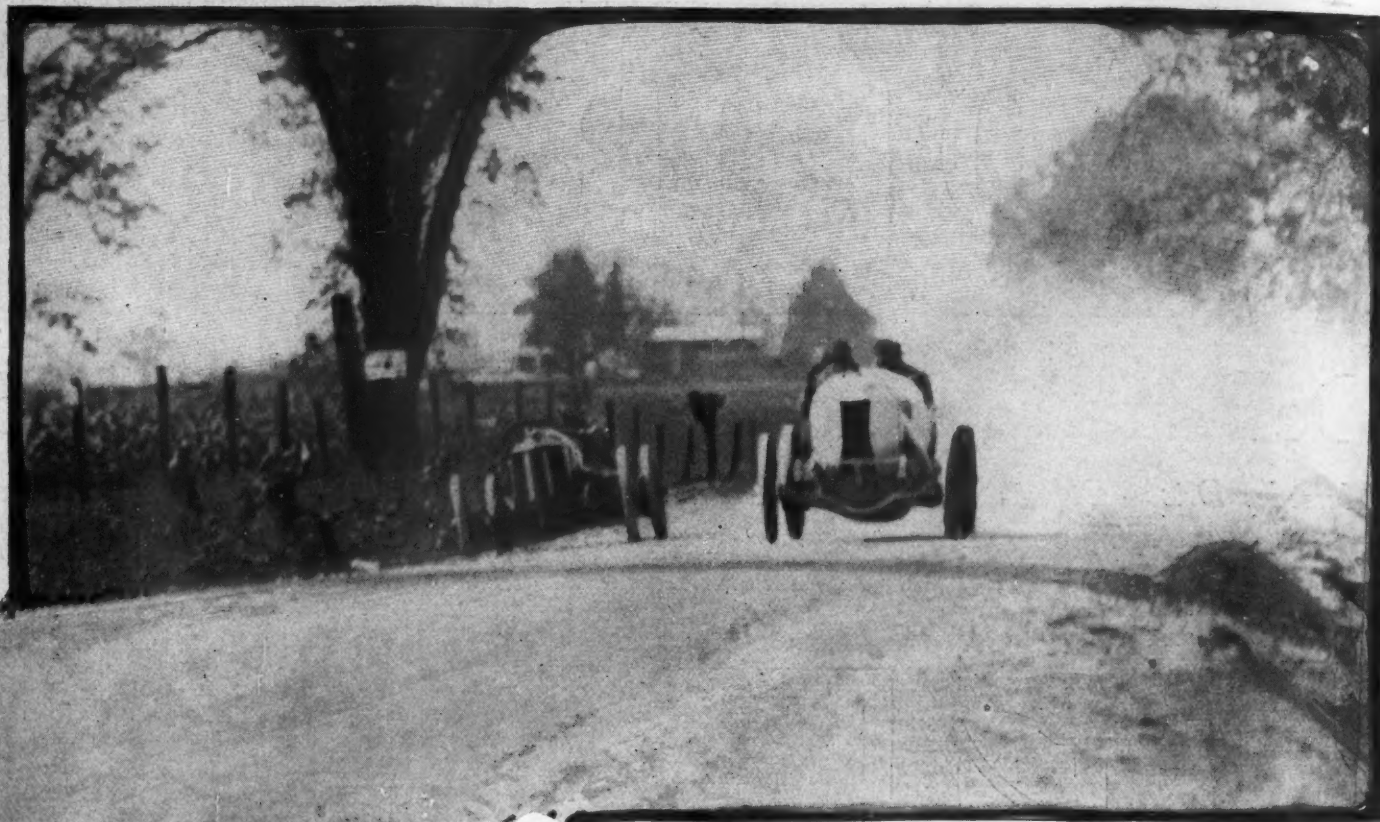
tively and the average he made was almost identical with the pace that won him two firsts at Elgin, when he won the Elgin trophy and free-for-all.

Of the nine cars entered to start this morning, eight lined up for Starter Wag-

ner's signal at 11 o'clock. Pullen's Mercer had been disqualified for being over-size. Five of the starters finished in the order named: De Palma, Hughes, Wishart, Anderson in a Stutz and Clark in a Mercedes. Mulford in a Knox special and Tetzlaff in the Fiat fell by the wayside, while Nelson in the Lozier was still running when the race was called.

### Three in the Fight for First

The fight for first place was among Tetzlaff, de Palma and Hughes until the Fiat went out and left the Italian and the Englishman to fight it out to the finish. That it was a close fight is evidenced by the fact that there was only a fraction of a minute between them after the four hours and 20 minutes of running. De Palma's time for the thirty-eight laps of the 7.9 mile course was 260 minutes 31.54 seconds, averaging 68.9 miles. Hughes' time was 261 minutes 14.24 seconds, averaging 68.8 miles per hour, only 1-10 of a



DE PALMA, WINNER OF THE VANDERBILT, ON SOUTH FOND DU LAC ROAD OF MILWAUKEE'S WAUWATOSA COURSE

## Lap-by-Lap Description

mile an hour slower than de Palma. Wishart went the distance in 276 minutes 35.75 seconds. Anderson in 279 minutes 40.95 seconds and Clark in 291 minutes 39.75 seconds. Mulford in the Knox went only two laps when magneto trouble put him out. Nelson was so far behind he retired in the twenty-sixth lap.

In spite of the difficulties in preparing the course which, with the heavy rains, caused the postponement of the race last week, the Wauwatosa track was in fine condition today. There was not an accident of any nature connected with the run-

ning of the classic. The road was well policed, the crowds well handled and the promoters seemed to have the affair very well organized. Stops at the pits were rare, as the tires seemed to hold up well.

### Fast Time a Surprise

By reason of the excellence of the course the time made was much better than was looked for by the officials of the meet, although no records were broken. Tetzlaff's fast lap of 6:15, equal to a speed of 75.7 miles per hour, opened the eyes of the crowd as to what speed could be made for one lap.

As de Palma crossed the finish line he was hailed by the plaudits of the 50,000 spectators gathered in the grandstand and in the parking spaces around the course. De Palma drove a consistent race and victory was deserved, coming for the second time in his career in the space of a few months.

Two of the cars in the race were equipped with wire wheels, and both finished with honors—Hughes, whose Mercer was fitted with wire wheels, and Anderson in the Stutz, which was likewise equipped with the same style.

TELEGRAPHIC TABLE OF TIMES BY LAPS IN EIGHTH RUNNING OF VANDERBILT CUP RACE AT

No.	Car	Driver														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
			7 miles 4658 feet	15 miles 4036 feet	23 miles 3414 feet	31 miles 2792 feet	39 miles 2170 feet	47 miles 1548 feet	55 miles 926 feet	63 miles 304 feet	70 miles 4962 feet	78 miles 4340 feet	86 miles 3718 feet	94 miles 3096 feet	102 miles 2474 feet	110 miles 1852 feet
22	Mercedes	De Palma	Elapsed time.....	6:57	13:32	20:11	26:52	33:31	40:09	46:52	53:42	61:17	68:00	74:37	81:13	87:44
			Lap time.....	6:57	6:35	7:39	6:41	6:39	6:38	6:43	7:50	7:35	6:53	6:48	6:42	6:52
23	Mercer—Special	Hughes	Elapsed time.....	7:13	14:04	22:37	29:59	36:32	43:47	50:39	57:25	64:16	71:06	77:54	84:40	91:22
			Lap time.....	7:13	6:51	8:33	7:22	6:33	7:15	6:52	6:56	6:51	6:50	6:32	10:08	6:45
26	Mercedes	Wishart	Elapsed time.....	6:52	13:14	21:33	27:59	34:23	40:48	47:15	53:46	60:22	66:53	73:37	80:13	86:44
			Lap time.....	6:52	6:42	8:19	6:26	6:24	6:25	6:27	6:31	6:36	6:31	7:21	8:24	7:15
27	Stutz	Anderson	Elapsed time.....	7:23	14:32	21:40	28:46	35:54	43:02	50:12	57:21	64:29	71:36	78:45	85:53	93:01
			Lap time.....	7:23	7:09	7:08	7:06	7:08	7:08	7:10	7:09	7:08	7:07	7:05	7:14	10:14
28	Mercedes	Clark	Elapsed time.....	7:13	14:05	20:58	28:05	35:12	42:20	49:28	56:35	63:42	70:49	77:56	85:03	92:10
			Lap time.....	7:13	6:42	6:53	7:07	9:47	7:01	7:07	9:14	8:30	7:05	8:51	10:37	8:25
25	Lozier	Nelson	Elapsed time.....	7:32	13:38	22:20	34:41	46:51	59:02	71:12	83:22	95:32	107:42	119:52	132:02	144:12
			Lap time.....	7:32	6:06	8:42	12:21	12:10	18:37	9:15	8:03	8:48	8:40	6:23	6:23	6:25
29	Fiat	Tetzlaff	Elapsed time.....	6:27	12:42	19:00	25:15	31:34	37:56	44:16	50:40	57:03	63:22	69:41	75:57	82:11
			Lap time.....	6:27	6:15	6:18	6:15	6:19	6:22	10:20	6:24	6:23	6:19	6:23	6:11	6:11
24	Knox—Special	Mulford	Elapsed time.....	6:31	13:17											
			Lap time.....	6:31	6:46											
											Out; magneto		trouble			



the circuit at the rate of 73.4 miles an hour.

Mulford passed Hughes in the second lap, but de Palma was still well in the lead. Hughes had tire trouble and was forced to stop at the pit. Tetzlaff gained on the others, passing Anderson, and making the lap at the terrific average speed of 74.6 miles an hour.

On the third lap Tetzlaff was in the lead, closely followed by de Palma. Then came Clark, Wishart, Anderson, Hughes and Nelson in the order named. Mulford was held up on the back stretch for magneto trouble.

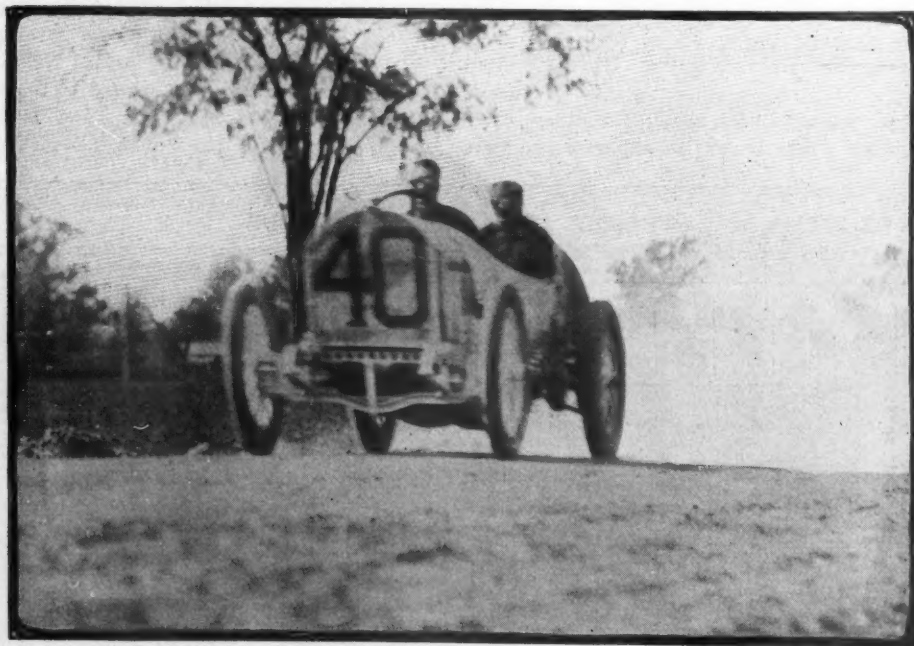
#### Mulford Out of It

The next lap saw no change in the positions of the two leaders, although Wishart changed places with Clark. The others retained their third lap positions, Mulford bringing up the rear.

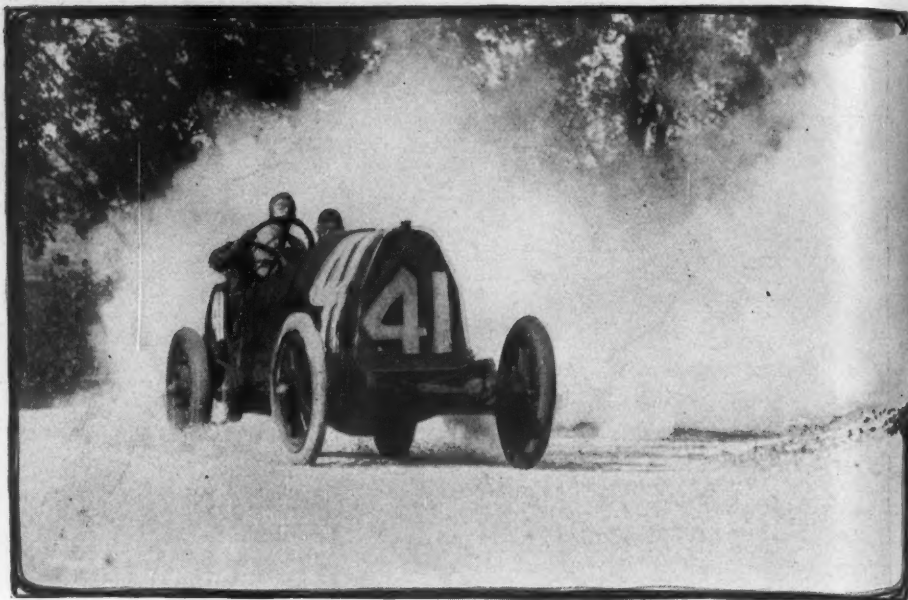
On his fourth lap, Nelson stopped at pit on account of engine trouble. He was obliged to stop for 3 minutes on the back stretch for the same reason. Mulford was again forced to stop in his fifth lap for magneto trouble. The trouble proved of such serious nature that Mulford was obliged to quit the race.

Clark was forced to stop on the back stretch in his fifth lap, which put him in fifth place and gave his old position to Anderson in the Stutz. The leaders remained in their same positions, namely, Tetzlaff first, de Palma second, Wishart third, and Anderson fourth. On his sixth lap Nelson's Lozier developed brake trouble which put him out of the running, although on the stretches he appeared to be going well.

On the ninth lap, Tetzlaff was still way ahead, his average for the distance being 74.9 miles an hour. De Palma, still second in the seventh lap, has covered a distance of 55 miles at an average speed of 70 miles per hour.



BERGDOLL IN GRAND PRIX BENZ ON NORTH FOND DU LAC STRETCH



BRAGG IN GRAND PRIX FIAT PRACTICING FOR NEXT SATURDAY'S CLASSIC

It was in the ninth lap that Wishart in Mercedes 26 succeeded in nosing de Palma out of second position. This Wishart held for three more laps, but on the twelfth he was forced to stop at the pit to change a tire. This gave the second place to de Palma again. All this time Tetzlaff was fairly burning up the course, completing twelve laps or nearly 95 miles at an average speed of 75.4 miles an hour, which pace he seemed able to hold.

#### Wishart Passes De Palma

In the fifteenth lap, Wishart again forged ahead of de Palma. The latter was forced to stop at the pit to replace a tire. While at the pit, he also took this opportunity to replenish his oil and gasoline tanks. This allowed Wishart a lead of 22 seconds over de Palma, these two cars furnishing a neck and neck race so far.

From the ninth lap through the first

half of the race, or about 150 miles, Hughes ran consistently in fourth place, while Anderson in the Stutz, Clark in the Mercedes and Nelson in the Lozier brought up the rear.

As to the three leaders, no change in their respective positions occurred from the fifteenth lap on through the nineteenth, or the century and a half mark.

Considerable tire trouble had developed so far in the race, although up to this time Tetzlaff was not troubled in this respect. On his nineteenth lap, however, he slowed up at the pit to the dismay of the crowd. A left rear tire was replaced and at the same time water, gasoline and oil were taken on.

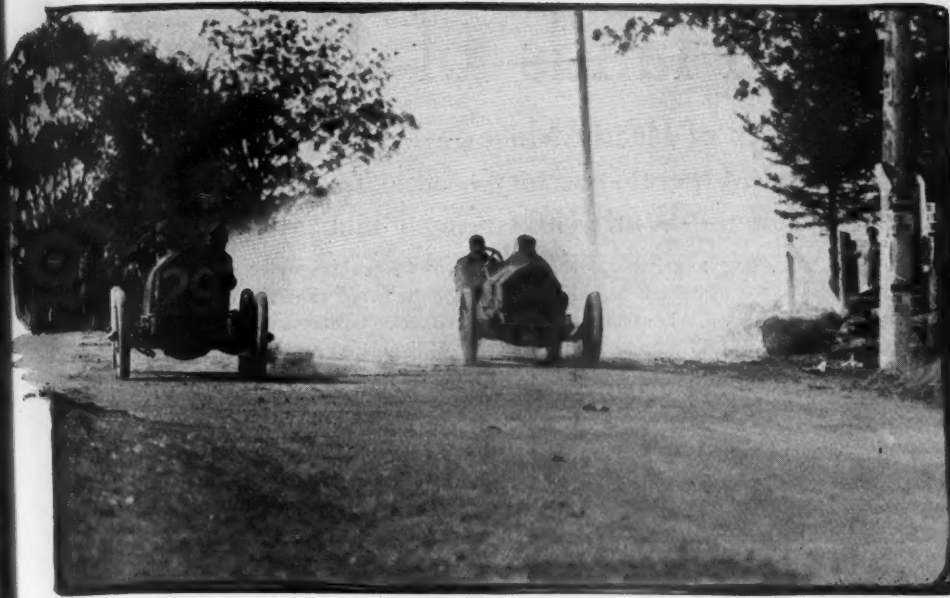
On his twelfth lap Clark lost time by misjudging his stop at the pit, being obliged to back up. He changed both rear tires and also took on gasoline. De Palma's rear tire had to be changed on the fifteenth round, which consumed 39 seconds.

Laps twenty and twenty-one were troublesome for several of the drivers, although they made remarkably quick tire changes at the pits. Wishart took 28 seconds to replace a rear tire, a speed record for this operation.

#### Tetzlaff Looks a Winner

At the start of the second half of the grind, Tetzlaff looked like a sure winner, he being 7 minutes ahead of his nearest rival, Wishart.

At the beginning of the twentieth lap, the contestants stood Tetzlaff, de Palma, Hughes, Wishart, Anderson, Clark and Nelson. This order held for the next lap, but in the twenty-second Hughes relinquished his position to Wishart. The former was obliged to stop at the pit for gasoline, oil and water. Hughie, however, hit it up after thus rejuvenating his car and regained his former position in third place on the twenty-fourth lap. The other cars maintained their position as at the start of the second half.



PRACTICE PICTURE SHOWING TETZLAFF CATCHING CHANDLER IN FALCAR

On the twenty-second lap, Anderson was obliged to stop at the pit for oil and gasoline, while in the twenty-third Wishart had to stop to replace a front tire.

Tetzlaff's average speed for twenty-five laps was 72 miles an hour; de Palma's, 69.1; Hughes, 67.9, and Wishart's, 67.4.

It was in his twenty-sixth lap that misfortune overtook Tetzlaff, when the drive-shaft of his big Fiat broke on the back stretch, putting him permanently out of the race. After going 205 miles at an average speed of nearly 73 miles an hour, he was obliged to sit by the wayside and see the honors go to one of his rivals, after it seemed almost certain that the race was his. Tetzlaff's hard luck recalled de Palma's fate at Indianapolis last June, and there was a murmur of dismay from the crowd when the husky voice of the announcer proclaimed that Teddy Tetzlaff, easily a favorite with them all, was out of the running for keeps.

Tetzlaff's fastest lap, and which proved to be the fastest lap of the race, was his third when he completed the circuit in 6 minutes 15 seconds, an average speed of 75.7 miles an hour. This was 1.53 minutes faster than the average time of last year's Vanderbilt.

#### De Palma Assumes Lead

Following Tetzlaff's misfortune de Palma took the lead, never losing the premier position from then on to the end, driving the remaining 94 miles at a daredevil clip.

Tetzlaff out, Hughie Hughes in his Mercer assumed second position. It was only a matter of seconds between him and the leader to the end. Wishart was now third, Anderson fourth, Clark fifth and Nelson sixth.

Excitement was running high, for it was seen that, should anything happen to de Palma, Hughes would be the victor. Only the time required for a tire change separated the leaders. De Palma and Hughes knew this full well. On the back

stretch on his twenty-eighth lap, de Palma blew a tire, but this did not materially affect his time, he running to the pit to make the change. On the twenty-ninth lap de Palma led the Englishman by 1 minute 56 seconds.

#### Misfortune for Three Drivers

The twenty-ninth lap proved disastrous for three of the cars, although from the twenty-sixth on to the end of the race there were no changes of the positions of the contestants. After the twenty-seventh lap the list was cut down to five cars, Nelson in the Lozier in this lap withdrawing from the race because he was too far behind. Wishart was obliged to put a new chain on his Mercedes on the back stretch in the twenty-ninth lap, while in the same lap Clark, Anderson and de Palma were obliged to call at the pits for new tires for the rear wheels.

Again in the thirty-first lap de Palma

was forced to stop for a tire change, but Hughes in the following lap had to stop for gasoline and water, which practically evened things up. The other cars were still in the positions which they had held from the two hundred and fifth miles.

Although de Palma and Hughes were traveling at a terrific pace, their speed was considerably below that which Tetzlaff had set earlier in the day. De Palma's average speed for 292 miles was 68.9 miles an hour, about 5 miles less than that of Tetzlaff.

#### Hughes-de Palma Battle

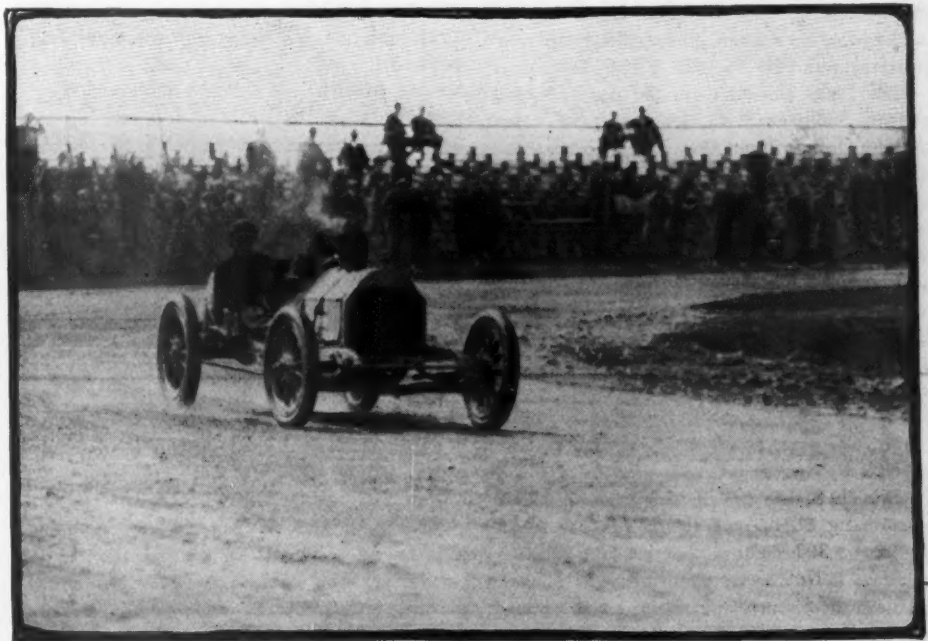
On the thirty-second lap, the Italian led by 39 seconds, but Hughes cut this down one second 'ere another circuit had been made. At the end of the thirty-fifth, however, de Palma had increased his lead by 8 seconds. He now had the better of his rival in the yellow Mercer by 46 seconds.

Again Hughes cut this down when after completing thirty-six laps, he was found to be only 39 seconds in the rear. Two laps later, however, when de Palma flashed across the tape winner of the eighth Vanderbilt cup race, Hughes was still at about the same position. The other cars finished in good shape. Wishart being the third to receive the checkered red flag, followed by Anderson and Clark, the latter had tire trouble in his thirty-fifth lap.

De Palma's time for the distance of 299 miles, 2764 feet, was 260 minutes 31.54 second, making an average of 68.9 miles an hour for the entire race. Hughes completed the distance in 261 minutes 14.24 seconds, averaging 68.8 miles per hour.

Wishart's time was 267 minutes 35.75 seconds; Anderson's was 279 minutes 40.95 seconds, while that of Clark was 291 minutes 39.75 seconds.

These speeds are considered good considering that the course has sharp turns and there are several grades.



ROBERTS IN MASON TAKING TURN AT CITY LIMITS

# Knox Company in Hands of Receiver

Springfield Concern Forced Into Courts by Lack of Ready Money—Assets Placed at \$2,000,000; Liabilities, \$1,300,000—Trustee to Operate Factory—Ohio Motor Car Co.

Again in Similar Predicament—Ward Buys King Plant

**S**PRINGFIELD, MASS., Sept. 28—Considerable surprise was created here today when the announcement was made that the Knox Automobile Co., one of the best known concerns in the country, had made an assignment for the benefit of its creditors to Edward O. Sutton and Harry G. Fisk.

It is estimated that the assets of the company as a going concern are about \$2,000,000; its liabilities, exclusive of its capital stock, are about \$1,300,000. The immediate cause of the assignment was a lack of funds to pay current expenses and it was said that there was hardly enough cash on hand to meet the weekly payroll last week. As a result the directors held a meeting Friday evening and they voted to make an assignment, so the papers were made out in the office of Charles H. Beckwith and filed shortly before noon today.

Unless creditors who have not already assented to the program of the directors in making an assignment take such action as will throw the company into bankruptcy, the trustee will keep the factory in operation for the present. The company has been doing a good business lately and there are many orders on the books for both pleasure cars and trucks, many of them fire wagons.

Mr. Sutton stated that a curtailment of expenses will be necessary to pull the company through the assignment without going into bankruptcy, and this will be made by a lessening of the force and a temporary reduction in output. This will be divided equally between the lines, as the orders have been coming in generally in equal numbers.

The Fisk Rubber Co. is one of the largest creditors of the company, the amount being about \$75,000. To the estate of the late Alfred N. Mayo, who a few months ago at his death was treasurer of the company, there is due about \$900,000, consisting chiefly of the company's notes. Mr. Mayo was the largest owner of Fisk company stock, and Harry G. Fisk is a son-in-law of Mr. Mayo, as is also Mr. Sutton, secretary and assistant manager of the company, so the matter is somewhat of a family affair. Knox company notes aggregating \$70,000, indorsed by Mr. Mayo, are held by banks, of which \$30,000 are in Springfield. The remaining \$270,000 of liabilities are held by about 300 creditors scattered about the country. Not one of them reaches \$5,000 and none of them is pressing, so the company has a good chance to get going again.

There is outstanding nearly \$1,000,000 of capital stock, much of which is held in and about Springfield. About half of this is preferred stock, and this stock represents the liabilities of the Knox company with its creditors 5 years ago, when the creditors agreed to take their pay in this stock. Whether the stockholders will get anything back now is a question. If the company should now be liquidated the outstanding debts hardly could be paid.

The \$2,000,000 assets are said to include \$315,000 for the real estate, \$1,200,000 for finished product and stock in process of manufacture and about \$200,000 in bills receivable. The Mayo estate is so large that it can withstand the present trouble, as it comprises besides the Fisk Rubber Co., the Merrimac paper mill at Lawrence and large interests in a brick making industry.

Mr. Mayo went into the Knox company originally through being a creditor when the company became involved in 1907 after several years of prosperity. An assignment was then made to Mr. Mayo and he took up the management of the company with energy and ability. He cleared things up and returned the management of the business to the company, of which he became treasurer.

The preferred stock issued in payment of debts at that time reached \$494,700 and was cumulative 8 per cent, being preferred not only as to dividends but as to principal in case of liquidation to the \$500,000 common stock. The first year following the company did a big business, clearing \$160,000, and next year double that amount. Three semi-annual dividends of 4 per cent were paid and things looked bright. But 2 bad years followed and Mr. Mayo had difficulty financing the company and on his death last summer there was much speculation as to the future of the concern.

## OHIO IN RECEIVER'S HANDS

Cincinnati, O., Sept. 27.—As the result of the necessity of preparing for a greater business than it had funds to handle, the Ohio Motor Car Co. of Carthage, O., has again fallen into the hands of a receiver. Action was brought against the incorporation by the Diamond Tire Co. of New York, a creditor to the extent of a \$6,000 note, which was due September 15 last, and which is still unpaid.

Vice-president A. E. Schafer filed an answer and joined in prayer for a receiver for the company. The judge appointed a member of a local tool works receiver, fixing his bond at \$25,000 and ordering that he continue the business, as

well as keep the service department going.

It is believed that the embarrassment of the concern will be only temporary, unless the differences between President C. F. Pratt and Vice-president Schafer, who are in active control of the business, with the rest of the stockholders and directors, are settled. The company was reorganized after a receivership a few years ago. A large business was being done, and, in preparation for a larger business than was anticipated the coming season, the company stocked up heavily and now has more than \$200,000 worth of materials and partly finished parts on hand.

The corporation is a \$250,000 one. Its last financial statement, made September 1, 1912, showed assets worth \$404,840.98, and liabilities of but \$177,828.18. A delay in receiving some of the material needed caused the canceling of many orders, and much of the income that was depended upon to meet the claims as they fell due, failed to materialize, bringing about financial difficulties, although, it is claimed, the company's assets exceed its liabilities by about \$200,000.

"We might say that recognizing for some time past that an increasing business demanded an increased liquid capital, we started out several weeks ago to secure the same, and our negotiations had finally reached a point where had our creditors been willing to hold off for another week or 10 days we should have been able to consummate our negotiations, and with the increased capital which that would have brought, we would have been in excellent financial condition to promptly liquidate all claims against us," says Vice-president Schafer. "As stated, however, some of our creditors insisted on pressing their claims, and therefore it was decided for the best interests of all creditors to go into the hands of a receiver.

"With regard to the differences which have existed between the president and vice-president on one hand and some of the other directors on the other hand, I would say that they have been matters of policy with reference to the conduct of the business, among other things being that the president and vice-president have insisted for a long time that a larger amount of money should be spent for publicity purposes.

"Within 48 hours of the time that the receiver was appointed, we were in receipt of overtures from some interests which are desirous of taking up our proposition and refinancing it thoroughly, and these negotiations are being proceeded with at this time. We are firmly of the opinion

that the receivership will be of only very short duration, and since we have received within the last 4 weeks more inquiries for our line than we had received in 12 months before, we feel confident that our affairs will soon be back in normal condition and that we shall be able to do an excellent business for another year."

#### WARD BUYS KING PLANT

Detroit, Mich., Oct. 1.—Artemus Ward, of the advertising firm of Ward & Gow, New York, has purchased the assets of the defunct King Motor Car Co. for \$41,000 and will continue the factory indefinitely. His bid was accepted by the United States district court receiver, the Union Trust Co., of Detroit, last Saturday, and the consummation of the agreement means that the creditors of the company will receive about 12 cents on the dollar.

Mr. Ward is the heaviest creditor of the company, having loaned it \$100,000 in cash and also has an unsettled claim for advertising against the concern amounting to about \$29,000.

The action of Mr. Ward was due to his desire to protect his investment and the determination to continue the company, at least for the present, means that the 219 cars partially completed and represented by unassembled material and parts will be finished and marketed in the near future.

When the first appeal to the courts was made concerning the affairs of the company, it was found that in order to continue the manufacturing as contemplated by Mr. Ward would require material, parts and money to the extent of \$175,000. This did not appeal to the accessory men and the field was left open to Mr. Ward to take the initiative.

While Mr. Ward declined to forecast anything but the immediate future of the company, it is understood that the organization will be kept together for a considerable period.

#### UNITED MOTORS' AFFAIRS

New York, Oct. 1.—While the official situation as regards the affairs of the United States Motor Co. is indecisive, the following tentative plan of reorganization has been published in New York covering the reorganization, by Wall street specialists in the securities of the company.

According to L. P. Cartier, the plan appended was submitted to all the interests involved in the problem of reorganization and was pronounced accurate except as to the details of distribution under the plan of assessment.

Officially, the reorganization plan will not be announced before Thursday afternoon, but it is generally understood that the plan has been arranged and the steps to be taken between Tuesday and Thursday are perfunctory.

The plan suggested to those interested is as follows:

The present company will be sold to a new company which will have a capitalization of about \$28,000,000 par value. The new company will have three classes of stock: \$10,000,000 first preferred 7 per cent cumulative

stock, \$8,000,000 second preferred 6 per cent non-cumulative, and \$10,000,000 common. There will be no bonds or debentures, and no fixed charges of any kind.

The present obligations of the company amounting to about \$12,000,000 will be taken care of as follows: The 6,000,000 outstanding debentures will be exchanged for new stock; \$4,000,000 notes held by banks will be exchanged for new stock; merchandise bills amounting to about \$2,000,000 will be paid in cash.

Present stockholders will be permitted to exchange their holdings for stock in the new company upon payment of \$22.50 a share on their old stock. The proceeds of these subscriptions will amount to approximately \$5,500,000. The subscriptions will be underwritten by prominent New York bankers.

As the company now has in the treasury about \$1,500,000, the new company will have approximately \$5,000,000 working capital after the payment of the \$2,000,000 merchandise bills. The new company will, therefore, start out free of debt and without fixed charges, with no obligations and with about \$5,000,000 working capital.

It is estimated that the present assets of the United States Motors Co., which will be owned by the new corporation, have a conservative book value of at least \$18,000,000 to an operating company, and are probably worth considerably more in the hands of a new, well-organized concern such as the new company will be. With the \$5,000,000 working capital added to these book values the company will have good assets of at least \$23,000,000 back of the \$28,000,000 total issue of stock. This means that there will be values of two and one-third times the total issue of first preferred stock, one and five-eighths times the second preferred stock and about one-half on the common stock. In other words, there will remain \$5,000,000 of assets against \$10,000,000 par value of common stock.

It is conceded by all familiar with the present business of the United States Motors Co. that with an adequate working capital the company would have earned in excess of \$2,000,000 a year and that \$2,000,000 is a conservative estimate of the new company's earnings during the next twelve months. This will leave, after the payment of first and second preferred dividends, about \$1,220,000 for depreciation, reserve and dividends on the common stock.

Preferred—Upon payment of \$22.50 a share on 100 shares of old preferred stock there will be issued therefor in stock of the new company, approximately: 30 shares of first preferred 7 per cent cumulative stock, twenty shares of second preferred 6 per cent non-cumulative stock, thirty shares of common stock.

Common—On payment of \$22.50 a share on 100 shares of old common stock there will be issued therefor in stock of the new company, approximately: Twenty-two and one-half shares of first preferred 7 per cent cumulative stock, twenty or seventeen and one-half shares of second preferred 6 per cent non-cumulative stock, twenty or twenty-five shares of common stock.

Based on the assets that will be in possession of the new company it is estimated that the new stock should have the following values: First preferred, \$90 a share; second preferred, \$70 a share; common, \$10 a share.

At these figures the value of the new stock received in lieu of 100 shares of old preferred would be \$4,400, for which a subscription of \$2,250 would be paid, leaving a value in excess of the subscription price of \$2,150. This gives a present value of \$21.50 to the old preferred stock. Figuring the common in the same way, gives a value of around \$12 to \$14 to the present old common stock.

#### CHALMERS INCREASES STOCK

Detroit, Mich., Oct. 1.—At a meeting of the stockholders of the Chalmers Motor Co. held today, the Detroit corporation voted to increase its capital stock from \$3,000,000 to \$5,000,000. Of this amount, \$1,000,000 was paid in stock dividends to the shareholders, and the other million was placed in the treasury for future use. The regular quarterly cash dividend of 2½ per cent, payable October 1, was also declared at the meeting. This amounts to about \$75,000. The closing price of the Chalmers stock on the Detroit exchange on September 28 was 156, and figuring on this basis the new stock issue of 10,000 shares has a value of \$1,560,000.

The Chalmers Motor Co. since its incorporation has enjoyed a wonderful growth, having extended its factory in 5

years from a single three-story building to the present plant with seventeen buildings and over 1,000,000 square feet of floor space.

To enable the company to make the factory development made necessary by its big success, the stockholders for a period of 18 months drew no dividends, but so far this year the company has been paying 2½ per cent per quarter and has now declared this additional stock dividend.

#### C. P. HENDERSON MAKES A CHANGE

Indianapolis, Ind., Sept. 30.—Charles P. Henderson has resigned as sales manager of the Cole Motor Car Co., to become president and general manager of the Henderson Motor Car Co., succeeding as president L. Carter, of Jessup, Ga., who has been the nominal head of the Henderson company since its organization some months ago.

Mr. Henderson is a heavy stockholder in the Henderson company, but when that concern was organized agreed to remain with the Cole company for the time being. The Cole sales department is to be in the hands of a number of district sales managers appointed recently.

#### SALESMEN ATTEND CONVENTION


New York, Oct. 1.—One of the largest and most successful meetings in the motor car trade, the sales managers' convention of the manufacturers of the Automobile Board of Trade, finished its work today and adjourned with the recommendation that a similar gathering be held within 3 months. There were thirty-nine present.

The papers discussed were of a kind that will make for a better knowledge of trade conditions and particularly for a broader understanding of the needs of the public, which is now buying 275,000 to 300,000 cars every year.

Papers read and discussed included "Freight and Shipping," by J. S. Marvin, traffic manager National Association of Automobile Manufacturers; "Selling and Advertising," by J. G. Monihan, of the Premier Motor Mfg. Co.; "Motor Car Equipment," by George E. Daniels, of the Oakland Motor Car Co., and C. S. James, of the Willys-Overland Co.; "Territory and Selling Rights," by Alfred Reeves, Maxwell-Briscoe Motor Co.; "Annual Models," by Charles W. Mears, Winton Motor Carriage Co., and S. D. Waldon, Packard Motor Car Co.; "Inclosed and Semi-Inclosed Bodies," by H. O. Smith, Premier Motor Mfg. Co.

#### LAMP PATENT SUIT STARTED

New York, Oct. 1.—Suit has been filed in the United States district court by the DuBois Safety Lamp Co. against the Gray & Davis company for alleged infringement of patent No. 919837, which covers a certain type of set-screws, used inside instead of outside the lamp structure. The matter is returnable on the October rule day and will be answerable 30 days thereafter. The patent, while apparently of minor importance, is said to involve considerable values.



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## Let Us Have Touring

**T**HE Glidden tour for this year was postponed a week ago, and now it has been called off altogether for this year because of a scanty entry list. On the face of it, this admission would seem to prove that touring is waning in popularity in America, that the cry "See America First" is more of an imagination than a reality, and that general country-wide interest in long-distance touring is on the wane.

**T**HIS is not the case. There is greater interest today in country touring than there was 10 years ago. Then why the apparent apathy of today? Bad roads is the answer. Had the proposed route from Detroit to New Orleans for this year's tour been over stone roads, over which the private owner could take his family without danger of being benighted in some quagmire; without danger of getting stranded in the middle of some creek to be forded; without danger of skidding into some deep ditch on a mud highway; without danger of getting delayed due to mud, and belated all night on an impossible road; or without danger of putting his new car entirely out of commission, then owners would have entered in large numbers and the tour would have been an unqualified success.

**I**T is putting the cart before the horse to lead what is supposed to be a pleasure tour over impossible roads, expecting the public to enter, and also expecting that, after the tour has passed through, all of the local sections of country will take up the question of building the roads as they should be built. Put the tour through first and expect the roads to be built afterwards is the wrong policy. It never has accomplished road building and never will. If the national tour is to be a stimulus to road building, then the tour must be given to a certain section of country conditional on the roads, outlined in that section over which the tour is to pass being improved at least 3 months before the scheduled start of the tour, and if such improvement is not made at that time, then the tour should not go over that route. With such a method of procedure there would be assurance that road improvement would actually come as the result of touring.

**T**HE national tour of 2 years ago passed over many sections of the present outlined route from Detroit to New Orleans. Two years ago the touring cars were forced to pick their ways through the trees of forests with real quagmires among the trees, and only long poles stood upright in these quagmires to tell which ones it was impossible to get through. At that time makers' representatives were forced to stand in mud and slime above the knees and literally push cars through these holes. That tour did not result in building of new roads through these sections, and if

the present tour did go through these sections and the car occupants had to do the same thing over again it is more than questionable if it would lead to any quicker activity.

**I**T is ridiculous to ask car makers to send their professional car crews over such so-called highways, and immeasurably more absurd to ask private car owners to pilot their machines, filled with their wives and children, over such highways. The selection of the route is wrong. It is always wrong to put a national private-owners' tour over some of the worst roads to be found in the country. Put the tour over good roads and you will have entries and the country will see that touring is not on the wane.

**T**HERE should be a national tour for 1913. It should be an owners' tour. Not a maker should be allowed to participate directly or indirectly lend his influence or money. The tour should be in the holiday season, when business men who want to lose the office cobwebs have an opportunity to do so. The holiday season is imperative, because then business is slack, law courts are closed, the great commercial life takes its annual sleep, and the business man can free himself without feeling he is neglecting business, as he must feel when he leaves his office in the months of September and October.

**T**HEN, the national tour should be over good roads, through country that combines the scenic with the historic, a country that has good hotels, good garaging facilities, and good bridges.

**I**T should not be imperative for each entrant to go the entire tour distance, which may be 1,500 miles or 2,000 miles. Divide the tour into sections, say, three of 500 miles each, and compel each entrant to cover under touring rules at least one of these sections. Put up a series of trophies: A grand trophy, preferably the new National trophy, for entrants covering the entire distance; put up a trophy for each of the separate three sections; put up a trophy for cars covering the first two sections, the intermediate two, or the final two sections. In this way it would be possible for an owner living in the territory in which the tour starts to cover the first section and return to his home in the course of a week. The same would be true with owners living in the territory comprising the second and third sections.

**I**N such a tour give time to visit the historic points of interest, and the scenic points. Issue booklets in advance descriptive of the points of historic interest and those of natural attraction. Publish points of commercial and industrial interest on all of the towns and cities passed through. In a word, make the tour worth while, and the car owners will support it.

## The Vanderbilt Cup

**T**HE eighth annual Vanderbilt cup race has been run, and while it lacked in point of numbers the entries of preceding classics, those who drove at Milwaukee Wednesday made up in quality what was lacking in numbers. Milwaukee must be complimented for its gameness in running off the meet. Without the backing of manufacturers who have supported other Vanderbilts, the Brewers made the best they could out of what was available; they pluckily post-

poned the meet when the course was discovered to be unfit, and even with the gloom cast by the death of Bruce-Brown they made good. A crowd of 50,000 on other than a holiday is a most excellent turnout and Milwaukee is to be complimented on its showing. There is no lack of interest in road racing in America among the people, and it is to be hoped Milwaukee will try again in 1913, when an even greater success should crown its efforts.

# Bruce-Brown Meets Death at Milwaukee

MILWAUKEE, Wis., Oct. 1—David Loney Bruce-Brown, racing driver, died this afternoon at the Trinity hospital here from a basal skull fracture as a result of the ditching of his Fiat car in which he was speeding at the rate of about 82 miles per hour on the Wauwatosa course while in practice for the grand prix which is to be run Saturday. His mechanic, Anthony Schudelare, whose skull also was fractured, lies at the point of death and his recovery is doubtful.

The accident occurred on the back stretch shortly before 1 p. m., when the entrants were at the height of the day's practice. While speeding at the remarkable rate of about 82 miles an hour, one of the rear tires of the big Fiat exploded, causing the car to lurch into the ditch. In a vain attempt to right the machine, Brown jerked the wheel in the other direction, causing the car to jump to the other side of the road. Both driver and mechanic were pitched out and the car, turning completely over, crashed through a fence.

Brown and his mechanic were picked up unconscious by farmers who had witnessed the accident. Word was immediately conveyed to the officials and both men were rushed to the Trinity hospital, where they were operated upon. Brown never regained consciousness.

The accident occurred on the lap following that in which Brown had made the circuit in 5:53.82, unofficially establishing a new world's road record. This was an average speed of 80.2 miles per hour.

The first inkling of the disaster reached the grandstand and officials when Tetzlaff, Bruce-Brown's team mate in another Fiat, drew up before the stand to inquire where Brown was.

David Bruce-Brown was born in New York in 1887 and began racing in 1907. His first appearance was in an Oldsmobile at the Empire City track, where he won his first race. In 1908 he acted as mechanic for the late Cedrino at Ormond beach. Later he created several straight-away beach records. His two most brilliant victories were the grand prize races at Savannah in 1910 and 1911, the latter in the same Fiat which he was driving today. In the French grand prix this year he won the first leg of the 2-day event and finished third, but was disqualified for taking on gasoline outside a regular station, which was against the rules.

## ROAD CONGRESS CONVENES

New York, Oct. 2—Special telegram—The 6-day annual convention of the American Road Congress opened at Atlantic City, N. J., Monday and will continue until Saturday, October 5, with three sessions daily. More than 600 delegates from all parts of the United States and Canada

## Fiat Driver Dies Following Accident in Grand Prix Practice



THE LATE D. BRUCE-BROWN

have registered to date and many more will arrive before the end of the week.

In addition to the good roads addresses, papers and discussion from the users and

## National Tour Called Off

New York, Oct. 2—Special telegram—The national tour, scheduled to run from Detroit to New Orleans, starting October 14, has been declared off for this season, but will be run over the same course in 1913 at a date to be announced later.

The declaring of the tour off for this year was decided on at a meeting here today of the A. A. A. tour committee, which gave out the following report:

"The national tour committee today postponed the annual reliability run until 1913. Presidential campaign activities are held responsible for the depleted entry list and suspended interest in the long distance tour. Many cities on the Detroit-New Orleans route have guaranteed teams for next year, while many sections of the route which are at present in bad shape, will have been rebuilt by that time."

The feeling is general among motorists that a national tour should be held in the holiday months of July and August, as it is almost impossible for many amateur motorists to get away from business after the middle of September.

from the road builders' viewpoint, there is a big exhibit of the United States office of public roads under the direction of Logan Waller Page and also a large exhibit of road-making machinery under the auspices of the National Association of Road Material and Machinery Manufacturers.

The first 2 days were given over entirely to the motor interests, being known as road users' days and conducted by the American Automobile Association which arranged the programs for the sessions. The remainder of the week is given over to various road building organizations: Wednesday's sessions are under the direction of the American Association for Highway Improvement; Thursday is financial day in road building; Friday is construction and maintenance day, and Saturday is also given over to this department.

Monday's program included addresses on national systems of marking roads, state motor laws, the farmer in road making, working state aid, federal aid, transcontinental highways and business organizations in road building.

Judge J. M. Hough, Kansas City, Mo., had presented for him an address on the National Old Trails Association, which is the transcontinental highway by way of Cumberland pike, Boone's Lick road and Santa Fe trail. He craved recognition for this transcontinental highway because of its historical significance, and also its possibility as an all-the-year-round route.

Mrs. Donald McLean, honorary president-general of the Daughters of the American Revolution, spoke on the same subject.

Charles Thaddeus Terry, chairman of the A. A. A. legislative board, claimed "a right of the motorists to be delivered from bearing all the expenses of road building and maintenance."

## RUBBER SHOW CLOSES

New York, Oct. 1—Despite a few jarring notes, the great rubber exposition came to a conclusion in a burst of harmony. The attendance during the 10 days of the show was excellent from the viewpoint of the rubber men, but would have been considered microscopical for a motor car show. It made up in quality what it lacked in quantity, according to those most interested.

The final act at the show was the sale of the crude rubber that formed the exhibits of various countries, amounting to all to about 150 long tons. The sale was not an auction, as the bids were submitted under seal.

The Brazilian state of Amazonas was given the chief award for an exhibit of wild rubber for its 30-ton heap of Madeira and British Malaya was given the principal prizes for plantation rubber shown.

# Goodyear Contributes to Road Fund

NEW YORK, Sept. 30—The Goodyear Tire and Rubber Co., Akron, Ohio, has authorized Carl G. Fisher to put it down for a \$300,000 subscription on the stone road from New York to San Francisco, the material of which has to be purchased by a \$10,000,000 fund subscribed by the motor car manufacturers, dealers, and owners. This is one of the largest single donations to date, and coming unsolicitedly from this concern shows the wide interest already being taken in making road-building a reality by the industry furnishing the money to buy the materials.

To date the following manufacturers representing Indiana have contributed, the gross amount exceeding \$350,000, on the basis of each company paying 1/3 of 1 per cent of its gross business for three successive seasons: Prest-O-Lite Co., Wheeler & Schebler, Ideal Motor Car Co., Premier Motor Mfg. Co., Waverley Co., Gibson Automobile Co., American Motors Co., Marion Motor Car Co., Henderson Motor Car Co., Empire Tire Co., Remy Magneto Co., Esterline Mfg. Co., Motor Car Mfg. Co., Gus Habich, Gibson Automobile Co., C. Off & Co., Gates Mfg. Co., Pumpelly Battery Co., Brown Commercial Car Co., Glover Equipment Co., G. A. Schnell, R. J. Irvin Mfg. Co., A. M. Westing Co., Cadillac Automobile Co. of Indiana, Archey-Aitkins Co., and the Hoosier Motor Club. These subscriptions amount to \$60,000 and downwards. This list includes many dealers, and other concerns engaging in manufacturing tops, batteries, and various other lines of work.

The industry is at present awaiting the action of Detroit as a unit on this road matter. Messrs. Waldon and Chapin, of the Packard and Hudson companies respectively, are enthusiastic over the plan and are working diligently to push it along. Henry Ford has issued a letter to all of his dealers and users with the aim of getting their views on the matter, which may to an extent determine the attitude of this company. Many members in the trade are constantly writing their friends so that the enthusiasm is working rapidly.

A. G. Batchelder of the American Automobile Association, who has been conducting a national campaign for federal aid in road-building, is in accord with the movement and looks upon it as working hand in hand with the general good roads campaign that his association is working on.

President Ancil Martin of the Phoenix, Arizona, board of trade has wired as follows regarding the transcontinental stone road, taking the southern route by way of Arizona so as to insure a highway open all the year around:

"National highway ocean to ocean must be open all the year around to be fully appreciated and useful. Only route open

## Tire Concern Will Pay Over \$300,000 for the National Trail

the year around lies through Salt River valley and Phoenix. This road endorsed by southern California and big sums appropriated to construct same. Many miles already splendid motor boulevard. We rely on your organization to see to it that this route is adopted by nation.—Ancil Martin, president; Harry Welch, secretary, Phoenix Board of Trade."

### DISBROW CUTS 50-MILE MARK

Detroit, Mich., Sept. 30—Louis Disbrow, driving a Simplex, set a new mark for 50 miles on a circular dirt track, when he covered that distance at the Michigan state fair grounds here Sunday in 45 minutes and 32 seconds. The previous record of 47 minutes 21.65 seconds, made at Syracuse, N. Y., a year ago at the New York state fair by Ralph de Palma, was cut down nearly 2 minutes. Disbrow's record of Sunday will be allowed, because the meet was sanctioned by the A. A. A.

and it was timed with the Warner electric timing instrument.

Several exhibition races also were run off in which Endicott, Kilpatrick, and Ulbrecht participated. A big crowd was in attendance at the races.

### BURMAN BREAKS MILE RECORD

St. Louis, Mo., Oct. 1—Bob Burman and his big Blitzen Benz were the feature of the 2 days' race meet which opened at the new St. Louis track Sunday afternoon. Burman lowered the world's record for a mile on a circular dirt track to :47:61.

This is the first time that there has been any motor racing here for some years and the great interest is attested by the number of local cars that were entered in the races.

The new track is not banked and is said by many to be dangerous. Sunday's summaries:

Five miles, non-stock cars, 450 inches piston displacement—Raimy, Ohio 999, won; Ringler, Mercer, second. Time, 2:05.

Five miles, non-stock, 600 inches piston displacement—Burman, Cutting, won; Savin, Ohio 999, second. Time, 4:02.

Remy Brassard and trophy, free-for-all, best two heats in three—Burman, won in straight heats. Time, 3:19 1/2 and 3:06 1/2.

Exhibition mile—Burman, Blitzen Benz, to lower record. Time, :48 1/2.

### ESTIMATE OF COST OF TRANSCONTINENTAL ROAD CONSTRUCTION

Accurate data already have been gathered on the subject of cost of road construction of the Fisher highway, and the following figures show the actual cost of materials and labor for a stone road, and also a brick road. The cost of concrete bridges is also given.

Stone roadway 12 inches thick and 2 inch screening New York to Mississippi river:

COST OF MATERIAL		COST PER SQ. YARD CUT 12 INCHES THICK	
Stone	.....\$1.25 f. o. b. siding	Stone	.....\$0.43
Excavation	.....50 cu. yard	Screening	......07
Teams	.....5.00 per day, 10 hours	Hauling	......43
Labor	.....2.00 per day, 10 hours	Unloading	......05
		Grading	......17
		Oiling	......05
		Rolling	......10
			\$1.30
			\$6,864.00

Roadway 9 feet for 1 mile=5,280 sq. yards at \$1.30=\$6,864 to \$7,000.

Roadway 12 feet for 1 mile=7,040 sq. yards at 1.32=9,334 to 9,500.

Brick roadway 12 inches excavation from New York to Mississippi river:

COST OF MATERIAL		COST PER SQ. YARD CUT 12 INCHES THICK	
Brick	.....\$18.00 per M f. o. b. siding	Brick	.....\$0.75
Concrete	.....4.50 per yard	Hauling	......16
Excavation	.....50 per yard	Grading	......16
Sand	.....1.00 per yard	Grouting	......12
Teams	.....5.00 per day, 10 hours	Foundation	......50
Labor	.....2.00 per day, 10 hours	Rolling	......05
		Cushion	......06
		Margin curb	......40
			\$2.20
			\$11,616.00

Roadway 9 feet for 1 mile=5,280 sq. yards at \$2.20=\$11,616 to \$12,000.

Roadway 12 feet for 1 mile=7,040 sq. yards at 2.13=15,000.

Concrete bridges		Cost if roadway is 9'		Cost if roadway is 12'	
6' span	.....	\$ 150.00		\$ 200.00	
12' span	.....	350.00		450.00	
14' span	.....	400.00		500.00	
18' span	.....	700.00		950.00	
24' span	.....	950.00		1,300.00	
36' span	.....	1,450.00		1,950.00	

### COST PER SQ. YARD CUT 12 INCHES THICK

Stone at	.....\$0.34	\$1,705.20
Screenings at	......06	316.80
Hauling at	......43	2,270.40
Unloading at	......05	264.00
Grading at	......17	897.60
Oiling at	......05	264.00
Rolling at	......10	528.00
		\$6,336.00

Stone at \$1 per cu. yard

# Hoosiers to Cross Continent Next Year

Exhibition mile—Burman, 300-horsepower Benz, to lower world's record. Time, :47.61.  
Five miles, free-for-all handicap—Burman, 20 seconds handicap, won; Savin, Ohio 999, second. Time, 4:55.

St. Louis, Mo., Sept. 30—Records for a mile and for 2 miles on a circular dirt track went by the boards Monday afternoon when Bob Burman thundered around the Maxwellton track at the new St. Louis fair grounds, doing the mile in 46 seconds flat and the 2 miles in 1:32%.

Ollie Savin, driving a Cutting, went through the fence on the first lap of a 5-mile free-for-all event which was to wind up the day's program. He suffered two broken ribs, but is not injured otherwise. The meet was called off after the accident.

## Summary:

Five miles, non-stock, 450 inches piston displacement—Raimy, Ohio 999, won; Ringler, Mercer, second; Ready, Apperson, third. Time, 5:11.

Three miles, Remy brassard, free-for-all—Burman won in straight heats. Time, 2:54% and 2:59.

Five miles, non-stock, 600 inches piston displacement—Burman, Ohio 999, won; Raimy, Ohio 99, second. Time, 4:39%.

Exhibition mile and 2 miles—Burman in 300-horsepower Benz. Time, :46% and 1:32%.

Last mile in :46.  
Ten miles, W. B. trophy, 600 inches piston displacement—Raimy, Ohio 999, won; Burman, Ohio 999, second; Savin, Cutting, third. Time, 10:41.

## BOTH CUPS GO TO MAXWELL

Buffalo, N. Y., Oct. 1—The Maxwell car, No. 25, was awarded the Laurens Enos trophy or sweepstakes prize for going through the entire 4 days of the recent 800-mile reliability tour of the Automobile Club of Buffalo without being penalized. The decision, which was rendered last evening by Arthur W. Kreinheder, who was referee of the run, also returns for winner of the Vars trophy, Maxwell No. 7, which completed the run with only 4 points against it, these being imposed for adjusting a magneto wire on the first day of the tour.

Albert W. Poppenberg's car, the Warren-Detroit, which was supposed to have gone clean in the tour, was found to have done 20 minutes' work on tires on the second day's run, the work being done while the motor of the machine was not in operation, which violated a rule of the contest. The performing of this work on the Warren-Detroit car was the ground on which Charles F. Monroe, of the Monroe Motor Car Co., based his protest for the Laurens Enos trophy. However, Referee Kreinheder investigated thoroughly the entire matter and learning that the work had been done on the tires, penalized the car 20 points, thus placing it down sixth on the list of eight cars, which finished the run. The winner of the special trophy for class 2-E touring car was announced as the Hupmobile, No. 8, which finished the tour with penalization of 6 points. It took some little time to arrive at this decision, but the matter was referred to the A. A. A. contest board for review.

## Indiana Manufacturers' Tour for 1913 May Go to San Francisco

INDIANAPOLIS, Ind., Oct. 1—At a meeting of the Indiana Automobile Manufacturers' Association at the Claypool hotel in this city last night, it was proposed that the 1913 tour of the organization be over one of the proposed routes of the Fisher-Allison stone roadway to the Pacific coast. The proposition was referred to the runs and tours committee, with instructions to report back within 30 days. This run would take the place of the four states tour and would be for Indiana manufacturers exclusively.

The suggestion came from W. McK. White of the Marion Motor Car Co., who thought it would be a good plan to make a pathfinding tour over the proposed new highway and mark the route so tourists might follow the trail to San Francisco in 1915 for the Panama-Pacific exposition.

It was estimated the tour would require from 16 to 20 days actual running in each direction and the tentative trail is what is known as the central route and lies through St. Louis, Kansas City, Omaha, Denver, Salt Lake City, Ogden, Sacramento and San Francisco.

Carl G. Fisher was present and in a short talk advocated the tour suggested, and offered his aid in making it a success.

Another proposition taken up at the meeting was that of running a special train for the exhibits of Indiana manufacturers who are to show at the New York motor show in January. It was proposed that the Indiana exhibits could be taken on a special train and that stops be made at Philadelphia, Pittsburgh and other important points en route.

The constitution and by-laws were amended to provide for nine directors and that the annual meeting should be held in September. The following directors, who will elect officers next week, were chosen: C. B. Warren, Haynes Automobile Co., Kokomo; D. S. Menasco, American Motors Co., Indianapolis; E. Mack Morris, Great Western Automobile Co., Peru; W. B. Harding, G & J Tire Co., Indianapolis; George A. Weidley, Premier Motor Mfg. Co., Indianapolis; Guy Simmons, Motor Car Mfg. Co., Indianapolis; Frank E. Smith, Maxwell-Briscoe Motor Co., Newcastle; H. H. McFarlan, McFarlan Motor Car Co., Connersville; R. P. Henderson, Henderson Motor Car Co., Indianapolis.

## HOOSIERS PREPARE FOR CONVENTION

Indianapolis, Ind., Sept. 30—Indianapolis swings open its doors to the retail motor car merchant and his salesmen on October 8 and 9. During those 2 days

the guests of the Indianapolis motor car manufacturers and those motor car manufacturers from other cities who are coming here to help their dealers and salesmen will be given an opportunity to get the inside on intensified salesmanship and advertising.

The convention will be held in the auditorium of the Claypool hotel. The plans call for business throughout, but arrangements will be made for those who desire morning diversion to visit the speedway and other places of interest in the city. Business sessions are scheduled for both October 8 and 9 with a speedway dinner on the evening of the 8th. On the speakers' program are:

John G. Jones, of the Alexander Hamilton Institute, New York, "Headwork in Salesmanship."

T. J. Zimmerman, Opportunity magazine, Chicago, "The Opportunity of the Motor Car Dealer."

J. J. Cole, president Cole Motor Car Co., "Why I Thought of a National Salesmanship and Advertising Convention."

H. O. Smith, Premier Motor Car Co., welcoming address on behalf of Indianapolis manufacturers.

Advertising Director Leroy Pelletier, Flanders Interests, Detroit, "The Co-ordination of Advertising and Sales."

John Lee Mahin, Mahin Advertising Co., Chicago, "How to Use Advertising in the Retail Game."

Elbert Hubbard, East Aurora, New York, "Ideal Salesmanship."

B. F. Lawrence, Indianapolis Star, "How to Get the Cooperation of Your Local Newspapers."

Ex-Mayor Charles A. Bookwalter, "Business Methods and the Motor Car."

John Wetmore, New York Evening Mail, "How to Spend Your Advertising Appropriation."

## HOOSIERS VISIT GEORGE ADE

Indianapolis, Ind., Oct. 1—About fifty members of the Hoosier Motor Club of Indianapolis, with their friends, made a run from Indianapolis to Kentland and return, Saturday and Sunday. One of the interesting features of the trip was a visit to the home of George Ade, the humorist, who threw open his home to the visitors, entertaining them in an elaborate manner. Weather for the trip was ideal and the round trip was made without special incident. Mr. Ade also will entertain contestants in the Chicago Automobile Club-Chicago Athletic Association team match which will be held October 12.

## S. A. E. DISCUSSES TIRES

New York, Oct. 1—The first meeting of the metropolitan section of the Society of Automobile Engineers was held September 26 at the United States Rubber building. The topic of the evening was substitutes for pneumatic tires. An interesting session was held, the greater part being devoted to a paper by Ethelbert Favary, who has invented a very novel and ingenious form of non-pneumatic tire. After Mr. Favary had answered with dispatch the various questions put to him, O. A. Parker dwelt upon the virtues of Newmastic, a tire filler, and Mr. Phelps, of the Zilio company, also talked of a successful filler.



ROAD THROUGH WOODS IN NORTHERN MICHIGAN



CHICAGO PATHFINDERS IN SAND APPROACHING ST. IGNACE

## Trail Blazed Around Lake

Chicago Motor Club Pathfinder Finds it Will  
Take 7 Days to Travel 1,107 Miles Around  
Big Inland Sea—Itinerary of Strenuous  
Reliability Run This Month

**C**HICAGO, Sept. 30—After a sensational trip around Lake Michigan, blazing the trail for the Chicago Motor Club's sixth annual reliability, the Velie pathfinder, which carried John G. DeLong, Ronald Clark and John Brolley, reached Chicago last Thursday night. The car was out 13 days in all, but traveled only 7 days in all. The pathfinders had a rough and ready time of it, but returned full of enthusiasm over the possibilities of such a route. They say that while grade 3 rules will prevail, yet the conditions will be strenuous enough to make the reliability fully as stiff a proposition as any of its predecessors. Through the woods of northern Michigan it is practically wild. Yet it can be negotiated, although there will be 2 days when the mileage will not be great.

The total distance to be traveled is 1,107 miles, an average of 158 miles a day. Four states—Illinois, Wisconsin, Michigan and Indiana—will be traversed. The run from Newberry, Mich., to St. Ignace, where the cars will be ferried across the straits, only is 65.2 miles in length. It is made purposely short because of the road conditions. The trail winds through deep forests and through sandy patches, which will furnish plenty of adventure. The problem of crossing the straits is a serious ones, because at this time of the year there is only one boat running. It is expected it will take

all night to get the cars from St. Ignace to Mackinaw City. Once on the other side, though, it will be a comparatively easy run the rest of the way to Chicago. The whole trip will be a test of driving ability and should stand out as unique in the annals of western reliability runs.

Entered already for the trip are two Velies, two Stutzes, a Chalmers six, Falcarr, two Stavers, and a Detroit. Two Cadillacs from the Northwestern Military and Naval Academy of Lake Geneva, Wis., are promised, while it looks now as if at least twenty or twenty-five cars will start in the affair. The itinerary of the tour is as follows:

Monday, October 21—Chicago, Waukegan, Kenosha, Racine, Milwaukee, noon control, 88.8 miles; Menominee Falls, Meeker, Schleisingerville, Addison, Theresa, Lomira, Byron, Fond du Lac, Oshkosh; total mileage for day, 170.2 miles.

Tuesday, October 22—Neenah, Menasha, Appleton, Wrighttown, Green Bay, Big Swamico, Oconto, noon control, 89.5 miles; Peshtigo, Marinette, Menominee, Escanaba; total mileage for day, 177.6 miles.

Wednesday, October 23—Gladstone, Rapid River, Manistique, noon control, 65.1 miles; Pleeeny, Germfask, Newberry; total mileage for day, 125.1 miles.

Thursday, October 24—Newberry to St. Ignace; no noon control and no stop for lunch; total mileage for day, 65.2 miles. Cars will be ferried across the straits that night, ready for the start from Mackinaw City the next morning.

Friday, October 25—Mackinaw City to Pellston, Brutus, Oden, Petoskey, noon control, 38.3 miles; Charlevoix, Elks Rapids, Traverse City; total mileage for day, 109 miles.

Saturday, October 26—Copenish, Manistee, Ludington, noon control, 96.3 miles; Kentwater, Hart, New Era, Montague, White Hall, Muskegon, Grand Rapids; total mileage for day, 207.2 miles.

Sunday, October 27—Kalamazoo, Paw Paw,

Decatur, Dowagiac, Niles, South Bend, noon control, 118.1 miles; Chesterton, Michigan City, Chicago; total mileage for day, 217.8 miles.

### NEW FLORIDA MOUNTAIN ROAD

Boston, Mass., Oct. 1—The Massachusetts highway commission has been visiting the different sections of the state the past 2 months getting in touch with the city and town officials in various places and learning their ideas as to the development of additional roads. As the commission will begin next year the expenditure of \$1,000,000 yearly for 5 years on roads, not counting the money from the motorists that will reach close to \$500,000, the members of the commission decided to sound out the people and learn what they wanted done.

One of the new roads decided upon by the commission and upon which work has already started is to go over Florida mountain in the western part of the state. There was considerable agitation for and against this road, and after the commission made the decision a number of people appealed to Governor Foss to have the route changed, but he refused to interfere. This new road will remove the one barrier to the northerly touring route in the Bay state. It will be 14 miles in length and the highest grade will be but and the highest grade will be 7 per cent. The cost will be more than \$150,000, requiring a special appropriation.



TYPICAL SETTLEMENT FOUND BY CHICAGO PATHFINDERS

## To Lay Denver-Salt Lake Route

Pathfinding Party in White Six to Start Next Monday to Open Up Highway That Will Be Link in Transcontinental Trail—Chamber of Commerce Back of Proposition



CHICAGO SCOUTS NEARING STRAITS OF MACKINAW

DENVER, COLO., Sept. 30—In order to open up a direct route from Denver to Salt Lake as a link in one of the transcontinental highways, a pathfinding car will leave Denver for the trip over the great divide on October 7. The Denver chamber of commerce has proposed the trip and has laid out on paper a tentative route which is believed to be entirely feasible for motor cars. The route is to be logged by John P. Dods, of the Automobile Blue Book. The pathfinding party will be carried in a White big six touring car and includes C. M. Kittredge, Jr., assistant secretary of the Denver chamber of commerce; James A. Harris, advertising manager of the White company; John P. Dods, western manager Automobile Blue Book Publishing Co.; N. Lazarnick, a New York photographer, and the driver. Both the car and the driver are supplied by the White company.

The proposed route takes in Buena Vista, Leadville, Glenwood Springs, Grand Junction, Price and Provo, passing through some of the most scenic portions of the Rocky mountains. When completed the route is expected to be one of the most important for transcontinental travel, as it links at Denver with both the Platte valley route and the Omaha-Denver route from Omaha, as well as the Golden Belt

route running from Kansas City. A connection can be made with the Santa Fe trail, as it connects directly with the Rainbow route at Buena Vista between the latter city and Pueblo. The Denver enthusiasts claim that more wonderful scenery is offered through this route than can be witnessed either by going through Wyoming or south through New Mexico. From Buena Vista to Leadville the route leads over wonderful mountain roads, which with wet weather exceptions as a rule are as fine as any boulevards found in the eastern cities. These roads are composed mostly of crushed rock and are not very susceptible to weather. The grades have been reduced so that they can be negotiated by any car.

Leadville is one of the old mining towns of Colorado and holds interest for tourists because of the famous mines located there. Tennessee pass, though one of the highest passes in the Rockies, is in excellent condition and is worth a long trip simply to go over the range at this point. Glenwood Springs is a far-famed summer resort and thousands of tourists visit there yearly from the east. Heretofore most of them have come by train, but with the opening of a good motor route it is believed that many will make the trip by motor car. Grand Junction is in

the heart of the wonderful fruit district of Colorado and as such has its own attraction.

Entering Utah, the route skirts the Castle valley coal fields, following the D. and R. G. tracks up to Price and from there to Provo and Salt Lake City.

### WILBY IN SASKATCHEWAN

Regina, Sask., Oct. 1—Thomas W. Wilby, who is making a transcontinental trip from Halifax, N. S., to Vancouver, B. C., for the Canadian Good Roads Association, reached here on Sunday in a 35-horsepower Reo. He declares he found miserable roads from Toronto to this city, especially so in Winnipeg, which he states is cut off from the eastern section by poor highways. From Toronto, Mr. Wilby came to this city by way of North Bay, Sudbury and Sault Ste. Marie, and by boat to Fort William. From there the route was made to Winnipeg and then across the prairies to Brandon and Regina. Concerning Winnipeg the motorist stated that from Sault Ste. Marie to that city it was almost impossible to traverse the roads. He added that a firm road from Port Arthur to that city would be the end of all such trouble and would certainly serve the western country with inducement to settlers.

# Illinois Demands Improved Highways



GROUP PHOTOGRAPHS OF BANKERS, FARMERS, BUSINESS MEN, MOTORISTS AND OTHERS WHO ATTENDED

PEORIA, Ill., Sept. 27—Immediate and radical steps toward a comprehensive system of improved highways are almost certain to result from the action taken today by the Illinois Highway Improvement Association in which all parts of the state were represented in convention. A fixed policy was outlined and adopted looking to a general method of procedure for the future and special action to be taken in the next meeting of the legislature.

## Platform Adopted

The association in a platform which was unanimously adopted went on record as in favor of and recommending a state highway commission to devote its entire time to road construction and maintenance throughout the state, improvement by state aid of main thoroughfares through the country by the commission to be turned over to the state for perpetual maintenance; employment of prisoners in road building on an honor system similar to that employed in Colorado; a compulsory dragging of all dirt roads and the payment of all road taxes in cash with the use of the state motor car tax, together with any other funds appropriated in the improvement of highways; federal aid in the construction and maintenance of postroads and trans-continental highways; an annual good roads day to be designated by the governor; and federal aid in building interstate roads.

The report of the committee on policy

## Meeting at Peoria Discusses Roads and Passes Many Resolutions

sets forth that Illinois, foremost among the states in American resources, finds its general welfare retarded by a system of wretched public highways constructed, maintained and administered under a method in vogue centuries ago, which is not adapted to the problems presented by modern traffic and out of harmony with the advancement of the state in other directions. A great network of 95,000 miles of country wagon roads is left to the haphazard work of 4,800 commissioners working independently of each other, poorly paid, largely inexperienced, and provided with inadequate funds.

Careful investigation has shown that of the \$7,000,000 expended annually on the wagon roads of the state, approximately 37½ per cent is wasted, and in some townships a much greater percentage is spent without permanent benefit. Highway improvement is no longer purely a local matter but one in which the citizens are interested to such an extent that the state should assist in solving the problem which the bad roads present to the people.

## Many Delegates Present

About 250 delegates from all parts of the state were present at the convention, representing all the varied interests of the commonwealth. All of the associations of

business men, laboring men, motoring organizations, bankers associations, chambers of commerce and the agricultural granges were represented by delegations. Several of the larger cities sent delegations of good roads boosters.

The discussion of the platform after it was presented by President William G. Edens included some of the most prominent politicians, bankers, labor men and manufacturers in Illinois. Their words carry weight and the fact that all of them have expressed interest and enthusiasm in the good roads movement indicates that the chances of getting the matter before the legislature and obtaining proper action in the very near future are bright.

## Among Those Who Spoke

Among those who discussed the report of the policy committee are A. P. Grout, president Illinois Farmers' Institute; Oliver Wilson, master National Grange; Edwin R. Wright president Illinois Federation of Labor; Charles J. Piez, president Illinois Manufacturers' Association; D. Ward King, inventor of the King road drag; J. D. Phillips, president Illinois Bankers' association; W. E. Wood, attorney Highway Commissioners' Association; A. G. Batchelder, of the American Automobile Association; Mrs. H. M. Dunlap, president home science department, Illinois Farmers' institute; Eugene Kimbark, president Chicago Association of Commerce; Homer J. Tice, member state legislature; John D. Shoop, president Illinois

# State Road Commission Recommended



MEETING OF ILLINOIS HIGHWAY IMPROVEMENT ASSOCIATION HELD AT PEORIA LAST WEEK

State Teachers' association; S. E. Bradt, chairman good roads committee of Illinois Bankers' Association; Thomas J. Tynan, warden Colorado state penitentiary; Jesse Taylor, editor Better Roads.

Mr. Taylor expressed himself as being strongly in favor of federal aid in main line construction but stated that it was necessary to convert the members of congress to this idea by making them feel the pressure of their constituents' desires. He stated that where \$4,000,000 was spent for target practice each year in the navy only \$50,000 was expended for highway improvement. He then compared this with the \$170,000,000 it required to maintain a standing army in the Philippines and suggested that the army would be much more useful if brought back and put to work on the roads. He stated that this country was wasting \$300,000,000 a year in the cost of getting produce to market because of bad roads and made the statement that with good roads, produce could be gotten to market at an average cost of 10 cents per ton mile.

## Competing With Mail-Order Houses

The point also was made that the cheapest and best way for the country merchant to compete with the great mail order houses was to improve the highways from his store, that the trading radius of a town was co-extensive with the good roads from the town during at least 5 months in the year, that the shortness of money and stagnation of trade was due more to

## Platform Also Suggests Employment of Convict Labor on Highways

bad roads than to any other cause, that they were responsible for 15 per cent of all money going out of the country through mail order houses. He held that all road construction and supervision of roads should be under an efficient county superintendent who, in turn, was responsible to a state engineer, with an advisory board consisting of the three best business men in the state.

## Would Also Drag Macadam

D. Ward King, the inventor of the split log drag, favored the dragging of not only dirt roads but said there should be compulsory dragging of macadam, gravel and clay roads as well. He suggested a law such as that in force in Iowa in which the man responsible for a strip of road was fined \$50 if the road was not dragged when necessary, and stated that the cost for such dragging averaged only \$3.25 a mile a year in Iowa.

B. F. Harris, president of the Bankers' association, announced that the 4,800 road commissioners in the state at present had 4,800 different ways of wasting the taxpayers' money, that the old laws of the state must be thrown out and new one looking to a state-wide supervision be enacted.

The attitude of the labor unions of the

state toward the question of convict labor in road work as expressed by Edwin R. Wright, president of the Illinois Federation of Labor, was surprising to many of the delegates present. He stated that it was the belief of the labor unions that the employment of convicts on the road was one of the best if not the only means of getting rid of prison competition against organized free labor. He stated that it was the opinion of the labor organizations that the 100,000 able-bodied prisoners in the state could be put on the roads where they would be taken out of competition in cigar making and the manufacturing of shoes, shirts and brooms. Federated labor asks to have the convicts put to work on the road and wants to see them put on the honor system, instead of by the ball and chain as is practiced in some states. A step has been taken in this direction in Illinois in the use of convicts in the stone crushers for road material at Joliet and Chester.

## Bankers Make Report

The representative of the Illinois Bankers' association stated that from a series of letters sent throughout the state it was found that the attitude of the farmers had materially changed in the past few years, and that their conversion to the good roads movement was chiefly due to the widespread use of the motor car among them.

The meeting was declared to have been a great success.

# Cheap American Car Scares British

C. W. Steiger, Chicago Carburetor Manufacturer, Just Back From Europe, Discusses Trade Footing Gained by Yankees—Washington Officials Do Not Anticipate Protective Tariff—July Exports Show Large Increase Over Last Year

## THE AMERICAN DANGER.

THE following article, from the *Berliner Zeitung am Mittag*, reflects in an interesting manner Germany's attitude towards American motor car manufacturers:

"A number of articles have appeared in the press lately calling attention to the 'American peril' that menaces our motor industry. The opinions expressed are widely divergent and while it is pointed out that Americans, in spite of their production in large quantities at a resultant low cost, can never seriously menace our home industry on account of the opinion prevailing that low prices indicate an inferior quality, it is conceded, however, from other sources that this low price will go a long way towards launching American cars on the market.

"As a matter of fact, the Americans have established themselves in practically all the South American countries and, in the last few years, have almost entirely supplanted European manufacturers. Recently they have turned their attention to England and are gaining ground in that country with surprising rapidity. The principle of the American manufacturer is to make his price as low as possible by manufacturing in large quantities, in some cases 40,000 to 60,000 cars a year, and by delivering the car complete and ready for the road; indeed, a complete car may be purchased for 4,000 to 4,500 marks (\$1,000 to \$1,125). These low prices have made the motor car very popular in America and have stimulated an increased demand. Taking into consideration the different economic value of money here and in the United States, it will be seen that these prices are really lower in America than they seem to us.

"This production in large quantities, with its accompanying lowering of the price, naturally results in a wider market, which in turn increases the demand, which again reacts upon the output. This high output makes

## The German Idea of It

possible a reduction in the cost of production, at a still lower price. So we have a steady cycle, tending to lower prices, which, however, will find its limit in the cost of raw material and labor.

"Another factor is that Americans specialize on two types—20 and 30 horsepower—so that the cost of the constituent parts is thus further reduced. The short space of time required for delivery is also of great importance. In America, in a great majority of cases, the owner drives his own car and has no chauffeur, so it is easy to understand that many now have cars who a few years ago regarded them as a great luxury.

"Owing to their low price, it is often deduced that American cars are constructed from poor materials and can therefore furnish but a limited service. This, however, is not the case; indeed, the bad condition of American roads soon showed the manufacturer that only by using the best materials could he compete with his rivals in trade.

"The Americans' constantly varying needs and their severe use of all machinery mean that a car is not expected to have as long a life as in this country. In America, when a man has used a car three years, he sells it and buys another.

"It cannot be gainsaid that Americans, in their ceaseless search for new markets for their tremendous output will seriously menace our industries. This is already shown by the fact that several selling agents in Germany have used a car 3 years, he this coming year."

## EXTENT OF THE DANGER

Figures just completed by the division of statistics of the bureau of foreign and domestic commerce show that the exports of motor cars to foreign countries in the fiscal year 1912 were valued at \$21,500,000, and of parts thereof, including tires, at \$6,750,000. If to these are added the shipments to Hawaii and Porto Rico, we get for the year sales of American cars outside of continental United States of fully \$30,000,000, as against only \$1,000,000 worth a decade ago. The total number of machines exported to foreign countries was 21,757, valued at \$21,550,139, averaging slightly less than \$1,000 each, while those to the non-contiguous territory were higher, averaging \$1,600 each. The export price of American cars in 1912 averaged less than in any earlier year in the history of the export trade. The average for 1912, dividing the total number of machines exported into stated value, was \$990 each, against \$1,100 in 1911, \$1,380 in 1910, \$1,700 in 1909, and \$1,880 in 1908. On the import side the cars imported last year amounted to but about \$2,000,000 in value, against more than \$4,000,000 in 1907. The export price of American machines has fallen from \$1,880 in 1908 to \$990 in 1912, while the import price of foreign cars entering the country has only fallen from \$2,392 in 1908 to \$2,216 in 1912, the reduction in price on the export side being 47 per cent. and on the import side but 8 per cent. English-speaking people are the chief purchasers of American cars. Of the 21,757 exported in 1912, 6,288 went to Canada, 5,716 to the United Kingdom and 3,625 to Australia and New Zealand; the next largest number, 1,611, being credited to South America, while European countries other than the United Kingdom took 2,296. Of the 963 cars imported into the country in the fiscal year 1912, 401 were from France, 188 from the United Kingdom, 131 from Italy, 116 from Germany and 127 from all other countries.



CHICAGO, Sept. 30—The cheap American motor car has the English manufacturer guessing, according to C. W. Steiger, of the Stromberg Motor Devices Co., Chicago, who has recently returned from a European trip. From the first of April to July one American manufacturer has sold 1,185 cars in England by accurate count. Several other American manufacturers' figures on sales also are large. The Englishman cannot understand how the American maker can retail a motor car in England at a price below that asked for the cheapest English-made car and at the same time pay a high duty on his American product.

Yet this is the condition which the English motor car maker is facing today. The

cheap American car, Mr. Steiger says, is built for American road conditions and when operated on the splendid European highways its durability is even greater than it is on its home ground. We, over here, build our motor cars very heavy, and they stand up on our poor roads equally as long as the European car holds out on the boulevard roads of England and the continent.

There is not as much demand for the higher priced American motor car because of the prejudice which every Englishman holds against American goods. He can buy an English-made car as cheaply as he can the medium-priced American car, and he prefers the former perhaps as much

as for any other reason because all American products are regarded as cheap.

In the manufacture of carburetors and in their development the English are 5 years behind, Mr. Steiger believes. No improvements of any appreciable nature have been made within that time. The tendency, on the other side, is to come back to the use of the high-speed motor and to the use of non-adjustable carburetors. For this reason the several makes which require but little attention in handling predominate in sales. While the English motor car user clamors for gasoline economy or low fuel consumption he uses gasoline which is of two grades, Pratt or Schell. These have a gravity of from 72 to 76

degrees. No fuel having as low a gravity as 68 degrees is used in any quantity because of the poor results in economy. The American carburetor has kept abreast of the times and has been developed to use the lower gravity gasoline most economically and with best results. This the undeveloped English carburetors cannot do. In general, it may be said that the popularity of the mechanical movement carburetor is on the wane abroad.

The Englishman is fussy also about the body of his car. He cares little for the mechanical construction so long as the interior and the general appearance of the machine is luxurious. Mr. Steiger interviewed a number of American dealers in London and from information gained from them he states that the greatest trouble which they experience in marketing their goods is because the American cars are furnished with stock bodies. The English taste favors the low, rakish type of construction and your Englishman will have no other. The American manufacturer who is making a success in England furnishes his car to his English agent without the body. In most cases the customer prefers to have the body built individually for the American chassis, that is, if he has come to realize the advantage of the stronger construction and generally sturdier build of the American machine.

As in this country, the time has passed when the American maker can sell his product abroad and make it stay sold, unless it carries service along with it. All the enterprising American firms which have entered the European field have sales branches in connection with service stations where the cars or other apparatus which they sell may be kept in good condition. The service factor is as big a one in England as it is here, and the Englishman asks just as much along this line as does the American.

As to magnetos, Mr. Steiger states that no progress to speak of has been made in England within a number of years. The same may be said for electric lighting. Very few of the cars carry any type of lights save oil lamps. This applies to even the higher priced machines. The self-starter is also laughed at all over Europe. The people on the other side do not believe it is of any value and they look upon it as more or less of a joke. Mr. Steiger cites one case in particular where a chauffeur who was operating an American car equipped with an electric starting system had let the latter get out of order and for some 4 months had made no attempt to have it put into operating condition again.

On the whole, the motor car industry in England is as good as anywhere else, according to Mr. Steiger. Manufacturing methods and the conditions under which the workmen produce even the finest of machines are deplorable, however. The American well-lighted factory is unknown except in one or two cases. Most of the

factories are poorly lighted, the buildings are old, and to the American the wonder is that such good products can be turned out under such extremely bad conditions, as compared with those in our own country.

#### HOW WASHINGTON VIEWS IT

Washington, D. C., Sept. 29—The movement for a protective tariff against foreign goods, especially American, begun by the motor car manufacturers of England, is not regarded as serious by officials of the state department. One of these officials, who does not want to be quoted, ventured the opinion that the movement might have been started by persons who wished to work up popular opinion in England to help float the stock of a big merger of motor car manufacturers there. Another official declared emphatically that, in his opinion, the whole thing was merely a

part of the political propaganda of the unionist party.

Reports which have been coming from London during the last few days indicating that it was only against the products of American factories that the movement was directed were received in Washington with amusement. An official of the bureau of trade relations remarked today that perhaps the men who are behind the movement in Great Britain had forgotten that the United States has a maximum and minimum tariff.

It is the official opinion here that the president would have no discretion in the matter if Great Britain should, by any tariff enactment, discriminate against American-made goods of any kind, but he would have to issue a proclamation at once imposing the maximum tariff against British goods imported into this country.

## July Exports Show a Large Increase

WASHINGTON, D. C., Sept. 29—The latest returns of the federal bureau of statistics show that during July 1,635 motor cars, valued at \$1,702,637, were exported to foreign countries. Of this number 78 were commercial cars, the value of which was \$156,458, while the remainder, 1,557, were pleasure cars, the value of which was \$1,546,179. During the same month of last year the total number of cars exported was 1,025, valued at \$1,104,807. The type of vehicles exported is not

given in the official figures for July, 1911, the bureau having just commenced the classification of the kind of cars exported. During the 7 months ended July, 1911, the total number of cars shipped abroad was 8,935, valued at \$9,194,564, while during the corresponding period of 1912 the number of cars exported was 15,495, valued at \$15,418,172.

The shipments by countries, numbers and value during the periods under consideration were as follows:

	1911		1912	
	No.	Value.	No.	Value.
France .....	33	\$ 45,544	36	\$ 31,843
Germany .....	16	14,357	22	21,188
Italy .....	32	20,508	36	26,795
United Kingdom .....	229	219,153	345	230,924
Other Europe .....	60	70,522	147	124,672
Canada .....	289	365,989	462	686,889
Mexico .....	7	18,285	9	14,683
West Indies and Bermuda .....	21	21,454	13	12,166
South America .....	48	69,105	150	198,798
British Oceania .....	168	156,951	309	184,034
Asia and other Oceania .....	91	75,106	153	124,086
Other countries .....	31	27,833	43	46,559

	SEVEN MONTHS ENDING JULY 1911		1912	
	No.	Value.	No.	Value.
France .....	273	\$ 326,800	430	\$ 333,063
Germany .....	73	91,283	252	199,726
Italy .....	137	169,914	176	169,252
United Kingdom .....	1,875	1,653,995	3,676	2,739,948
Other Europe .....	508	492,222	1,023	859,446
Canada .....	3,724	3,925,265	5,197	6,253,889
Mexico .....	147	258,064	125	183,020
West Indies and Bermuda .....	175	210,432	196	208,303
South America .....	444	604,229	1,071	1,288,543
British Oceania .....	938	858,196	2,128	1,948,505
Asia and other Oceania .....	477	428,119	843	878,678
Other countries .....	164	176,045	378	355,799

The shipments of parts, not including engines and tires, increased from \$255,282 in July, 1911, to \$394,296 in July last, and from \$1,901,707 during the 7 months of 1911 to \$2,893,753 during the same period of this year.

The imports of cars decreased in num-

ber from 80, valued at \$175,741, in July, 1911, to 64, valued at \$155,251, in July last, and from 492, valued at \$1,067,091, during the 7 months' period of 1911, to 467, valued at \$1,082,301, during the same period of this year. The detailed imports were as follows:

	1911		1912	
	No.	Value.	No.	Value.
France .....	22	\$ 56,142	36	\$ 95,438
Germany .....	14	33,080	6	18,063
Italy .....	10	14,578	6	11,111
United Kingdom .....	10	21,469	5	8,810
Other countries .....	24	50,472	11	21,834

	SEVEN MONTHS ENDING JULY 1911		1912	
	No.	Value.	No.	Value.
France .....	178	\$383,959	252	\$617,242
Germany .....	88	193,092	36	87,149
Italy .....	50	82,610	46	74,065
United Kingdom .....	78	190,740	88	209,186
Other countries .....	98	216,690	45	93,759

# Foreigners Discuss Horsepower Ratings

LONDON, Sept. 20—The committee appointed by the treasury in order to investigate the horsepower rating of motor cars has now issued its report. The recommendation of the committee, after hearing all of the evidence, is that the present rating now enforced be retained as regards the taxation of motor vehicles. The committee believes that the majority of those interested in the manufacture of motor cars are in favor of this course, not only because the method of rating is substantially fair as between one car and another, but also because any change of system would lead to a great deal of inconvenience to persons who have made arrangements for manufacturing or dealing in cars in classes suggested by the present system. In view of the fact that an engine with a longer stroke consumes more gasoline by reason of developing more power, therefore this engine pays an additional tax through the imposition of the tax on gasoline.

The committee was appointed December 6, 1911, with the following reference:

"To consider the provisional regulations which have been made under section 86 of the finance act of 1909-10 for determining the horsepower of motor cars, and to report whether any amendments are desirable, with special reference to the equitable treatment of steam cars and electric cars."

The committee has held a number of meetings, and has had before it seventeen witnesses representing manufacturers and the various institutions and societies in connection with the motor car industry. The main point to be considered by the committee related to the effect of stroke-bore ratio, a topic which has been much discussed in recent years by various societies and institutions concerned in the manufacture of motor cars. For example, according to one formula put forward by the Society of Automobile Engineers based upon a large number of engines, the power of an engine of which the bore and stroke are equal should be 33 per cent less than an engine of similar bore in which the ratio of stroke to bore is 2 to 1.

## Horsepower of Old Cars

With regard to old cars, a number of witnesses represented that the horsepower of cars made a number of years ago was considerably less than that of modern cars of the same rating. A grievance is undoubtedly felt by many owners by reason of the high tax on a car of little value. The committee, however, has not considered it within its province to make any recommendation as to the taxation of cars which have depreciated in value in the ordinary way.

Steam cars hitherto have been taxed in the same manner as the gasoline car; that is, the steam engine in a car is taken as

## English Favor Retention of Present Standard—French After New System

equal to that of the gasoline engine having equal cylinder area, and where the engine is double acting the rating is correspondingly increased. Since the real horsepower is independent of the engine dimensions, and depends solely on the boiler, the regulations now in force are obviously incorrect. The committee recommends that in regard to steam cars 3 square feet of heating surface should be taken as equivalent to 2 square inches of piston area, which may be regarded as giving 1 horsepower in a gas engine.

The number of electric motor cars is comparatively small, and are all used in this country for one kind of service—namely, town work. Most of these vehicles are fitted with motors rating at 8 horsepower, and as the result of experiments carried out by the committee, it is found that at 20 miles per hour about  $7\frac{1}{2}$  horsepower has been used. They are of the opinion that these cars can be described with sufficient accuracy as exceeding  $6\frac{1}{2}$  but not exceeding 12 horsepower, and recommend that the regulations dealing with them be amended accordingly.

## Recommendations Made

The recommendations of the committee are most conveniently summarized in the form of the following regulations for the determination of horsepower, which might, in the opinion of the committee, take the place of the provisional regulations now in force:

1—For the purpose of these regulations the horsepower of any motor car deriving its motive power wholly from an internal combustion engine worked by a cylinder or cylinders shall be taken to be:

(a) In the case of a single-cylinder engine the horsepower attributable to the cylinder of the engine:

(b) In the case of an engine having two or more cylinders the sum of the horsepowers attributable to the separate cylinders.

2—The horsepower attributable to any cylinder of an internal combustion engine shall be deemed to be equal to the square of the internal diameter of such cylinder measured in inches by a numeral.

(a) In the case of a single-acting cylinder having a single piston, the numeral used as divisor shall be 2.5.

(b) In the case of a single-acting cylinder having two pistons, the numeral used as divisor shall be 1.6.

3—The horsepower of any motor car deriving its power wholly from a steam engine shall be taken to be proportional to the effective heating surface of the boiler supplying steam to such an engine, at the rate of 1 horsepower for every 3 square feet in such effective heating surface, and the effective heating surface shall be taken to be:

(a) In the case of a boiler having horizontal or approximately horizontal tubes, the whole of the surface of the tubes which is exposed to the flame or hot gases;

(b) In the case of a boiler having vertical or approximately vertical tubes, half of that surface of the tubes which is exposed to the flame or hot gases.

4—Any motor car deriving its motive power from an electric motor or motors shall be deemed to be of a horsepower exceeding  $6\frac{1}{2}$  but not exceeding 12.

5—In measuring cylinders and boilers, and in calculating horsepower, fractions of inches and feet and fractions of a unit of horsepower are to be taken into account.

6—Where it appears that in consequence of the exceptional design or construction of the engine of any motor car the horsepower as calculated under the preceding rules is substantially less than the average power which the engine would develop in continuous use on the road if there were no restrictions on speed other than those imposed by the car itself, then such average power shall be taken as the power.

The committee also suggests that motor cycles be taxed according to horsepower, and that the horsepower be determined as in the case of motor cars, a new class comprising cars of less than 5 horsepower being added to the schedule of rates of taxation in the finance act.

## NEW FRENCH RATING PROBABLE

Paris, Sept. 18—France is about to adopt a new official horsepower rating for taxation purposes. Up to the present taxation has been paid on the catalog denomination of horsepower, the authorities having the right to refuse the manufacturer's declaration of power if they considered it too low. They appeared to have no formula for determining horsepower, but merely estimated on what the motor should give by the cylinder bore. Thus, a four-cylinder motor of 4 inches bore was officially rated at 21 horsepower, without any consideration of length of stroke or number of revolutions. A 3.1 inch bore was rated at 12 horsepower, and a 6-inch bore at 45 horsepower. If a manufacturer used two figures, as 20-30, the higher of the two was taken.

The rating was manifestly low, for it was based on the assumption that only one-half of the maximum power, as delivered during a bench test, was ordinarily available at the road wheels under normal conditions of running. It also had the disadvantage of causing manufacturers to rate their cars low, thus affording users the benefit of the minimum taxes, but giving a poor impression among non-technical buyers; or of giving a high-sounding rating with increased taxation for the owner. In many cases manufacturers have overcome the difficulty by merely indicating bore and stroke of the cylinders.

The new official rating, which, after being approved by the minister of finance, probably will go into force for the year 1913, is based on the following formula:

$$P = K n D^2 L w,$$

in which P indicates the horsepower; K is a numerical coefficient to be determined; n the number of cylinders; D the bore of the cylinders; L the piston stroke; and w the angular velocity of rotation. The coefficient K will be 0.00020 for single cylinder motors; 0.00017 for twin cylinders; 0.00015 for four cylinders, and 0.00013 for motors having more than four cylinders. The coefficient K has been selected with a view to determining the power normally available at the road wheels and not the power developed under the favorable conditions of a bench test.

# Electric Car Makers Have Show Inning

BOSTON, Mass., Sept. 28—Boston's long heralded electric show opened here to-night and the old hackneyed expression "a blaze of glory" was really a fitting one to describe it. For a distance of about a mile on Huntington avenue there are flaming arcs on each side of the street, there being 216 of these, so that persons traveling along find themselves walking through a lane of brilliancy never before equaled in Boston. On the outside of Mechanics' building, where the show is being held, there are 45,000 lights of varying hues. Inside the building there are 200,000.

There are sixty-two machines in the building now, and a few more may be brought in early Monday, so that the total may reach seventy when the show is well under way. Of this number there is a very close division between pleasure and commercial types, and while a quick glance at the machines would lead one to believe that the pleasure cars outranked the business ones, a count shows that they do not, for there are thirty-three commercial to twenty-nine pleasure vehicles. This is an indication of the future of the industry.

These machines are displayed by eighteen different makers. In what is known as Machinery hall, the section of the building forming the triangle reaching out toward Copley square, the motor cars are displayed. They take up more than half the room,

On the right of the main aisle the Buffalo Electric Co. exhibits three machines, two coupes and a roadster. One of these is equipped with wire wheels, the first of its kind to be shown in Boston. Directly across the way J. S. Harrington & Co. are showing the Flanders colonial electric. Adjoining the Flanders is the space of the Waverley electrics being shown by the J. W. Bowman Co. There are two pleasure types of closed models, and one light delivery wagon. Also on the same side of the aisle is the Anderson Electric Co., of Detroit, showing the Detroit electrics, for which a branch was recently established here. There are four vehicles there. Two of these are the coupes showing the design where all passengers face the front; the other pleasure vehicle is the roadster and there is a light delivery wagon.

Taking up the greater portion of the right hand side of the main aisle adjoining the Buffalo electric is the General Vehicle Co.'s main exhibit. This comprises five trucks of varying sizes and two of the little trucks used in railroad stations for handling baggage. Across the way the S. R. Bailey Co., of Amesbury, is showing three of the new models known as the business man's roadster.

On the right hand aisle the Walker

## More Than Sixty Machines Being Displayed in Boston Exhibition

Vehicle Co., of Chicago, a concern new to Boston, is making a display of four trucks and a transmission. The Atlantic Electric Co., of New York, is represented by one truck. The Century company did not have its exhibit complete on opening night, the cars being delayed in transit.

The General Motors Co. has a good show. There is a coach that is new to this section and three trucks that vary in capacity. A chassis also is shown, the only one there, by the way, so that visitors may learn something about its construction. The Baker commercial line is being exhibited by Frank N. Phelps. Conspicuous in the space is the new ambulance about to be delivered to the town of Swampscott. There are also a light delivery wagon and a truck on view. The Baker pleasure line is shown by A. F. Neale and it is made up of the roadster and coupe, the latter the new model with revolving front seats, allowing the passengers to face in any direction.

The Studebaker is represented by commercial vehicles, only the three exhibits utilizing space designed for two. This is brought about by an ingenious arrangement. There is a large truck and on the platform of this vehicle is the light delivery wagon, both vehicles utilizing the one space. The other model is a light delivery wagon also. The Lansden Co. is exhibiting three delivery wagons, while the Ohio is represented by one of the pleasure types, a coupe. A. P. Underhill is showing one of the new models of the Grinnel cars, for which he recently took the agency. The Rauch & Lang Co., represented by the Tiffany company in Boston, has a fine exhibit comprising four models, three closed types and a roadster.

Down below the Tyler Brothers' corporation are showing the Columbus electrics that they have taken on within a few weeks. They got space so late it was impossible to get upstairs. The General Vehicle Co. has a supplementary display of three trucks down here, too. Other makes represented down stairs are the Bailey, Waverley, Lansden, Baker and Walker, the latter three commercial types.

The various makers of storage batteries are all represented by prominent spaces, such as the Exide, Edison, Gould, American, Philadelphia, etc. The Edison Electric Co. has a garage exhibit showing how the electrics are charged.

### CHICAGO SHOW DRAWINGS

New York, Oct. 2—Special telegram—Official drawing took place this afternoon at the headquarters of the National Association of Automobile Manufacturers for

the Chicago pleasure-car show and also for the commercial-car show to be held following the pleasure-car show. As formerly the Coliseum, Coliseum annex and Coliseum basement and First Regiment armory will be used for both shows by the promoters of the affair.

Eighty-two car concerns already have reserved space and three-quarters of the center space of the armory has been reserved for electrics, which have not drawn yet. On the main floor of the Coliseum are thirty-nine exhibitors, the Coliseum annex has eight, Coliseum annex basement seventeen, while the armory will have eighteen exhibitors.

In the Coliseum the exhibitors are arranged in four central spaces and also around the wall as formerly. To the left of the center aisle on entering are Peerless, Flanders, Pierce and Haynes, and on the right of this aisle from the entrance are Glide, Buick, Cadillac and Maxwell. Other center floor exhibitors are Stevens, Stearns, Winton, Stoddard, National, Hudson, Packard, Premier, Reo, Franklin, Locomobile, Studebaker, Oldsmobile, Pope, Chalmers and Overland.

Around the Coliseum walls or under the gallery are Selden, Columbia, Auburn, Rambler, Fiat, Marmon, Alco, White, Cole, Case, Imperial, Mitchell, Moon, Oakland, Lozier.

In the Coliseum annex are American, Kissel, Cartecar, Knox, Velie, Inter-State, Hupmobile and Garford. In the basement of the Coliseum annex are Colby, Paterson, Halladay, Lexington, Cino, Midland, Ohio, Crow, McIntyre, Cunningham, Edwards, Herreshoff, Republic, Metz, Bergdoll, Davis, Elkhart and Mercer.

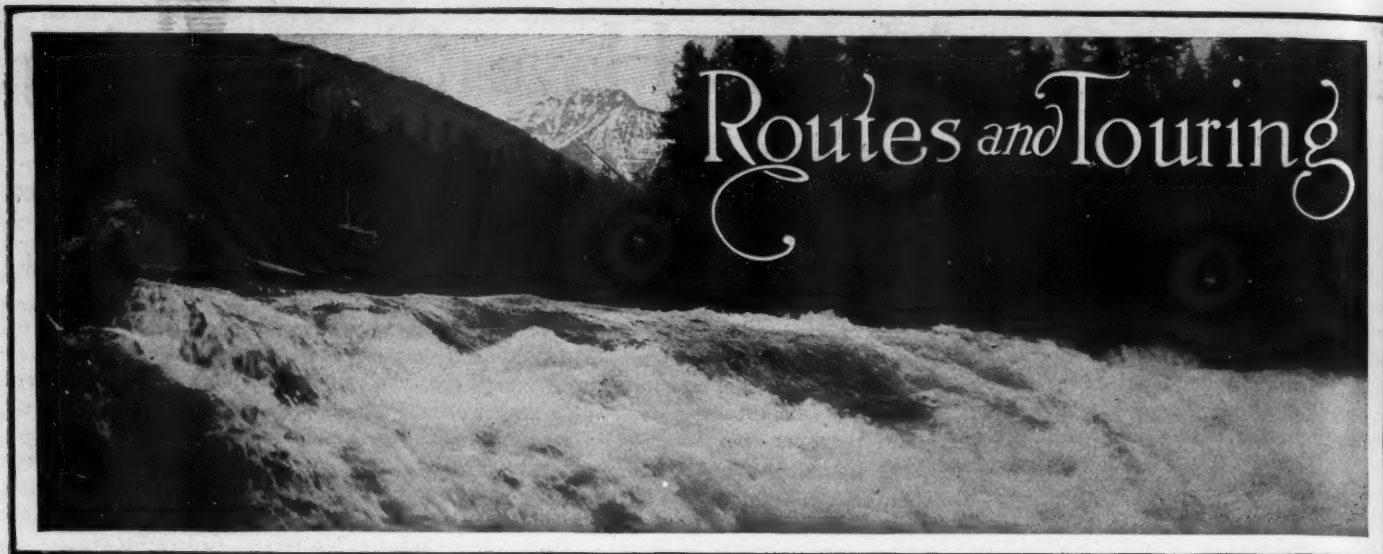
In the First Regiment armory are Jackson, Austin, Matheson, Abbott, Michigan, Regal, Cutting, Kline, Pathfinder, Staver, Pullman, Krit, Westcott, McFarlan, Great Western, Stutz and Speedwell.

For the commercial car exposition, spaces were assigned to the following companies: Coliseum center: Buffalo electric, Jeffery, Reo, Selden, Autocar, Waverley, Adams, Kisselkar, Speedwell, International, Gramm, Pope, Locomobile, Pierce, Velie, Buick, Peerless, Federal, Hupmobile, Kelley.

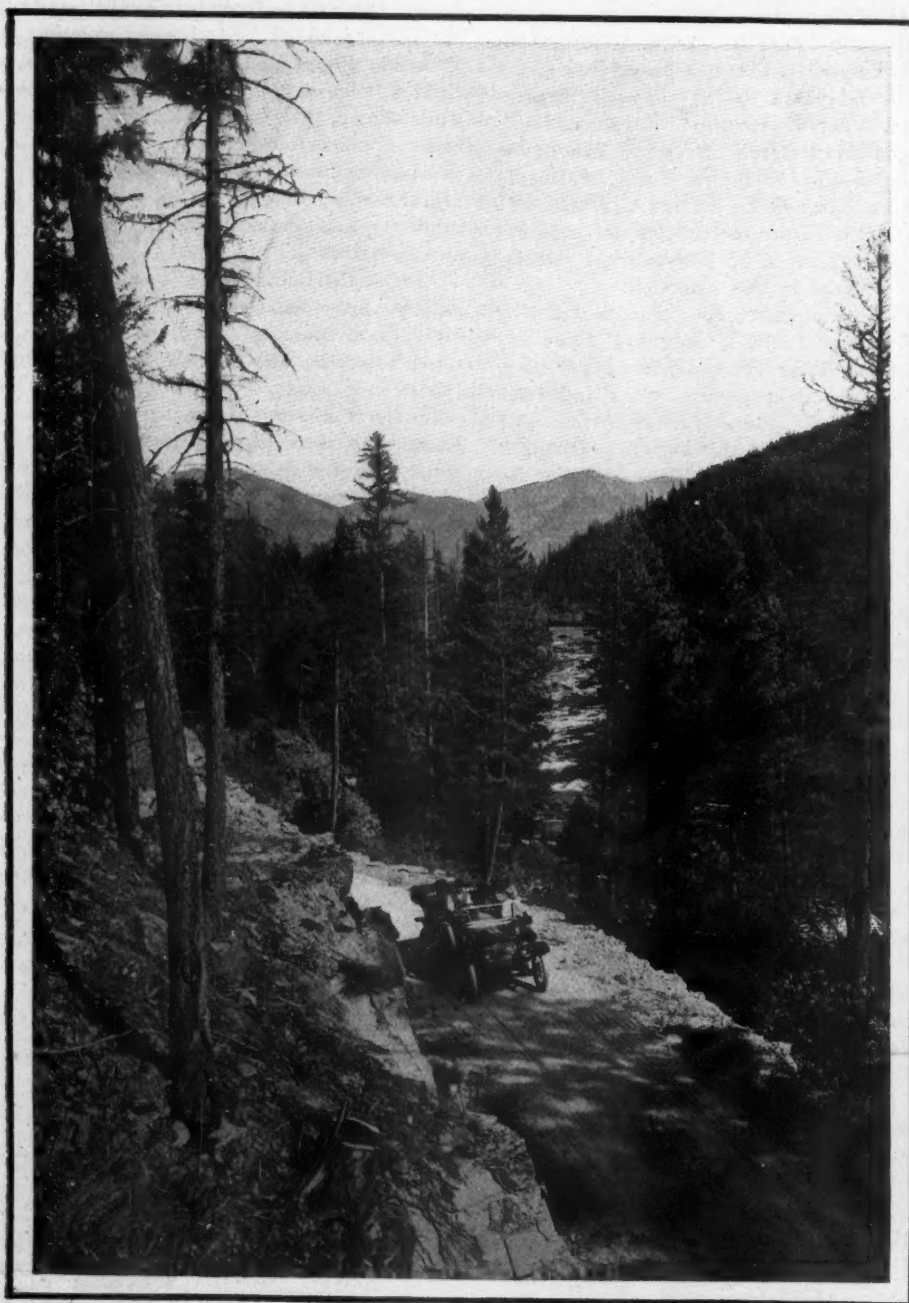
Coliseum, along the walls: Durable Dayton, Sternberg, Alco, Walker, U. S. Motor, Garford, Rapid, Reliance, Knox, Krebs, Old Reliable, Clark, McIntyre.

Coliseum annex: Bowling Green, Universal, Service, Standard, Transit, Dart, M. & P. electric, Lippard-Stewart.

First Regiment armory: Chicago Pneumatic, International Harvester, National motor truck, Sanford, Commerce, Four-Wheel Drive, Gramm, Bernstein, Poyer, Bessemer, Harwood, Barley, General Vehicle, Avery, Packard, White, Alden Sampson, A. L. Smith, Lauth-Juergens.



FAMILIAR VIEW OF RUSHING WATERS IN GLACIER NATIONAL PARK



SAMPLE OF ROAD IN FLATHEAD COUNTRY, MONT.

## Good Roads Found in the Scenic Flathead Country

By Frank D. Stoop

**S**PEAKING of good roads and good roads work, probably no place in the United States can show any more marked improvement than the northwestern part of Montana for the past season. The creation of Glacier national park and the movement to connect Yellowstone national park with it by the Park-to-Park highway have set everyone to thinking about good roads.

During the past season, a road has been opened from Kalispell, Mont., north through Gateway into Canada, and several cars have passed to and from points in British Columbia and the United States. Very little trouble is experienced in taking cars back and forth, and in fact the authorities are encouraging touring, instead of placing anything in the way. From Kalispell to the boundary line is about 85 miles, and, once across the line, the roads are equally as good as ours.

On July 28 the Flathead Motor Club made a run from Kalispell to Eureka over this road, and although the road was not in perfect condition, owing to recent rains, the distance of 75 miles was driven in about 4 hours. Most of the cars returned the same day, but the writer spent several days touring further north into Canada. The most thrilling part of the trip was encountered when crossing Elk River canyon about 8 miles south of Elko, where there was a 480-foot drop which registered by the speedometer just 6-10 of a mile. The road was hard and no difficulty was experienced. The scenery was magnificent.

About 75 convicts are working in Flathead county on the east side of Flathead lake, constructing a regular motor car road which will be part of the Park-to-Park highway to allow tourists to travel

# Information.

GLACIER NATIONAL PARK IN NORTHWESTERN MONTANA

## Marked Improvement Seen in Northwestern Mon- tana Roads

on either side of this beautiful lake.

A great many cars have visited and entered Glacier national park this year, and everyone will return and bring others with them, it is thought. The citizens of Kalispell realize the importance of motor car traffic and are determined to have a direct motor car outlet from here to Spokane through Libby and down the Kootenai river, eliminating all bad grades and by far a better road than west from Missoula through Wallace, Ida. This road will be open for tourists next season.

For the good work done in Flathead county by the Flathead Motor club and citizens in general, they are rewarded by securing the good roads congress next year. This convention will be held some time in July and preparations already are under headway for a rousing time. An effort will also be made to secure the Glidden tour running west from Minneapolis to some point in this country. Every effort is being put forth to open Yellowstone national park to the motor car.

The northern route is bound to become a very popular one for summer travel. Tourists will use it almost entirely during the warm weather, connecting on the coast with the Pacific highway, traveling south to California and returning east by the southern route.

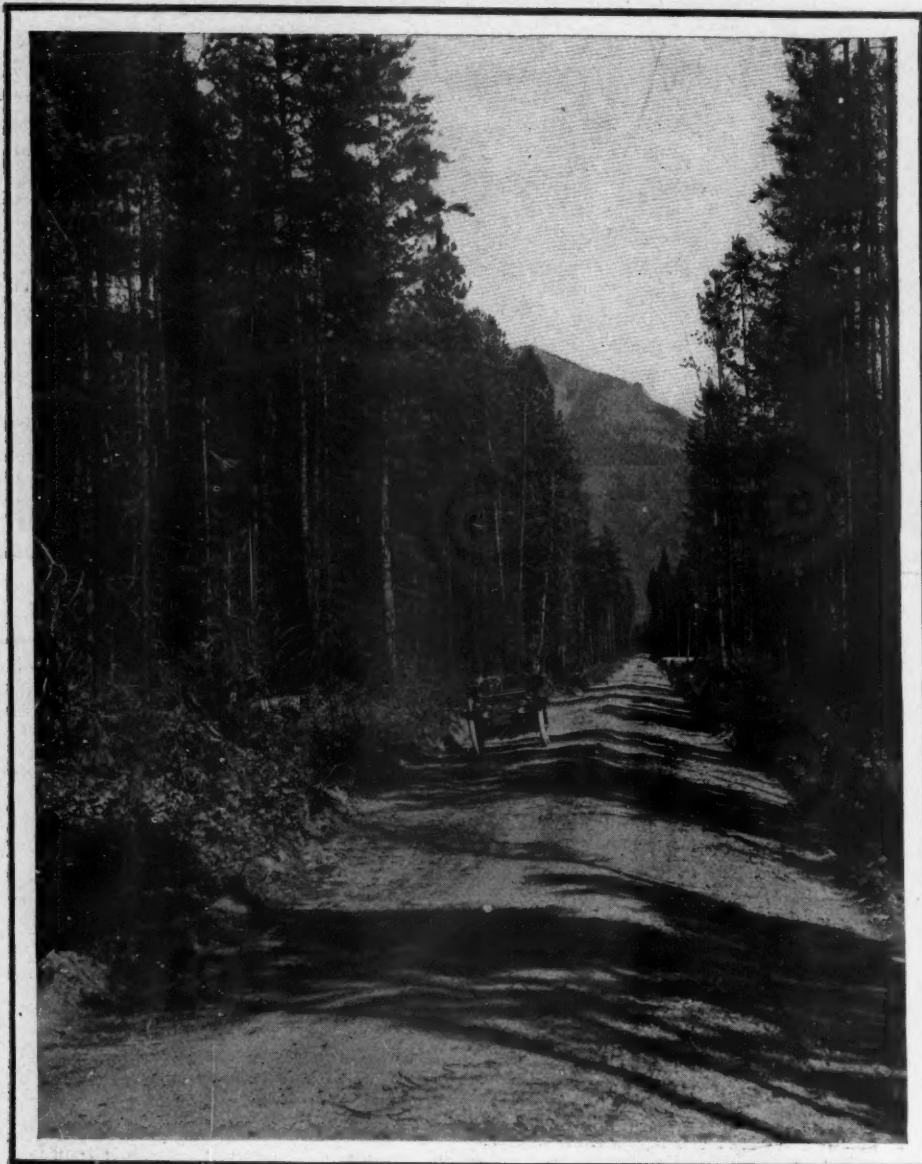
### IMPROVING YELLOWSTONE PARK

Iowa City, Ia.—Editor Motor Age—I have received from Senator Warren, chairman of the appropriation committee of the United States senate, the following letter, which tells of the efforts that are being made by the senator to have the roads in Yellowstone park so improved that motorists may use them.

"During the recent session of congress I secured an appropriation of \$77,000 to be expended in placing roads within



ROAD BUILT BY CONVICT LABOR ON EAST SIDE OF FLATHEAD LAKE



MOST BEAUTIFUL DRIVEWAY JUST COMPLETED TO SWAN PARK

Yellowstone park in condition to be used by motor cars as well as other vehicles. This is the first appropriation secured for the improvement of roads within the park so that they may be used by motor cars, and is intended to provide for improving the roads between the Lake Hotel and the east boundary of the park; Thumb Station hotel and the south boundary, and Junction hotel and the west boundary of the park. With these roads placed in shape for the use of motor cars, tourists can enter the park from the east, south or west and reach the main belt line road which encircles the park.

"It will require an appropriation of \$2,000,000 to place the belt line road in condition to be used by motor cars and teams, and eventually I hope this appropriation will be secured so the entire park may be utilized by tourists using motor vehicles. In addition to securing the appropriation of \$77,000, for the improvement of the roads within the park, I was able to obtain \$10,500 for improving the roads within the forest reserve south of the park to Jackson and through

Hoback canyon. With these improvements the roads from Rock Springs to the south boundary of the park will be made suitable for motor travel.

"I also secured \$4500 for improving the road in the forest reserve between the east boundary of the park and Cody, Wyo., and with these improvements and the improvements of the road within the park from Lake hotel to the boundary, motor travel may be inaugurated from Cody to Lake hotel. In addition to these specific items, the state of Wyoming will receive upwards of \$20,000 for general road improvements within the forest reserves."—Robert N. Carson.

#### PLANNING FLORIDA TRIP

Milwaukee, Wis.—Editor Motor Age—I intend to take a trip from Jacksonville, Fla., to West Palm Beach with my car and would like directions. I will ship from Milwaukee to Jacksonville. Will I have to take out a license in Florida?—Dr. T. C. Gelhaar.

Jacksonville to Ormond is 90 miles, all but 18 miles being a poor sandy road. Take the South Jacksonville ferry and

continue to St. Augustine, Moultrie, Bulow turpentine camp, and Ormond. Follow through Sea Breeze, Daytona, Port Orange, New Smyrna, Titusville, and along the river to Coco and Rockledge, 75 miles; Rockledge to Fort Pierce is 75 miles and the intermediate towns Eau Gallie, Melbourne, Maco, Sebastian, and Quay; then to Palm Beach the mileage is 68 and the trails faint. You pass between two small lakes, the road being very soft mud, then continue to Jupiter and Riveria.

Thirty days are allowed non-residents in Florida and the home state tag must be displayed.

For running directions, etc., you are referred to the Blue Book No. 3.

#### MILWAUKEE—PALM BEACH

Milwaukee, Wis.—Editor Motor Age—I am going to make a trip to Florida in the near future, and would like a route to Cincinnati, O. and on to Palm Beach.—E. Raisch.

One of the best fast roads to Chicago, a distance of 95 miles, is Kilbournville, Sylvania, Everett, Deerfield, Northfield, Grosse Point, Wilmette, Evanston, and through Lincoln park into Chicago, making Rensselaer, Ind., that night with 86 miles through Jackson park, Bryn Mawr, South Chicago, Whiting, East Chicago, Grasselli, Gibson, Hessville, Highlands, Schererville, Crown Point and Thayer. Next day the routing is Enos, Morocco, Brook, Fowler, Oxford, Montmorenci, Lafayette, Dayton, Mulberry, Jefferson, Frankfort, Cyclone, Kirklin, Augusta, and Indianapolis, with 154 miles for the day. It is an enjoyable 119 miles to Cincinnati through Hawthorne, New Palestine, Fountaintown, Gwynneville, Arlington, Rushville, Connersville, Evartson, Blooming Grove, Brookville, Cedar Grove, New Trenton, Harrison, Miamitown, Cheviot, Westwood and Cincinnati. Another beautiful stretch, particularly so in the fall, is to Louisville, 135 miles, by way of Cleves, Elizabethtown, Lawrenceburg, Aurora, Rising Sun, Oberdeen, Markland, Vevay, Carrollton, New Castle, Shelbyville, Simpsonville, Middletown, St. Mathews, and Louisville.

The answer to the Saginaw, Mich., inquiry will serve you to Columbia, Tenn., from which point you route directly south to Birmingham, Ala., 177 miles, through Pulaski, Elkmont, Blowing Springs Hollow, Athens, ferry to Decatur, thence on to New Decatur, Flint, Hartsells, Falkville, Lacon, Cullman, Hanceville, Garden City, Bangor, Blount Springs, Warrior, Kimberly, Morris, Gardendale, Louisburg, Artesia Springs and Birmingham.

Routing 190 miles to Atlanta, Ga., the towns are Gate City, Trussville, Argo, Springville, St. Claire Springs, Asheville, Greensport, Peeks Hill, Anniston, Oxford, Iron City, Edwardsville, Talapoosa, Waco, Bremen, Temple, Villa Rica, Winston, Douglasville, Austel, and Mableton. Between Atlanta and Augusta there is mostly gravel roads. The 171 miles

through Decatur, Ingleside, Clarkson, Stone Mountain, Redam, Lathonia, Rockdale, Covington, Social Circle, Rutledge, Madison, Greensboro, Union Point, Crawfordville, Camak, Thomson, Bonesville, you will find some stretches of clay, the worst being between Madison and Greensboro.

With 60 miles of sand on the best road between Augusta and Savannah, it is 133 miles through McBean, Waynesboro, Perkin, Millen, Scarboro, Rockyford, Statesboro, Pretoria, Stilson, Blichton, Pooler and Savannah. Then it is 177 miles through Freedman's Grove, Riceboro, Eulonia, Darien, ferry to Dents, Brunswick, Old Sterling, Tarboro, Owens ferry, Kings ferry and Callahan. At Darien the charge is \$5 for the ferry, and at Owens and Kings ferry they are \$1.

#### ANOTHER GOING SOUTH

Oshkosh, Wis.—Editor Motor Age—Kindly give the best routing to Jacksonville, Fla. Would it be advisable to try to drive the car through, starting from here about the middle of October? Possibly it would be best to ship the car across Kentucky and Tennessee, as I understand it is mountainous.—A. E. Hamley.

Route 81 miles to Milwaukee over excellent gravel roads and through rolling country, passing the towns of Van Dyne, Fond du Lac, Byron, Theresa, Addison, St. Lawrence, Schleisingerville, Richfield, Meeker, Menominee Falls, Fussville, and Milwaukee.

The balance of the route is outlined for an inquiry from Milwaukee, and by sending your car by rail as suggested under ordinary conditions you ought to be able to make the trip. It would not be a bad plan for both cars to go together. If you wish to look into this suggestion and communicate with the Milwaukee party, the address will be given if desired. There is a great deal less mountain work on this route than on the much longer and generally preferred one east from Indianapolis over the National highway through Ohio and Pennsylvania, to Hagerstown, then south through Virginia and the Carolinas. Of course there is considerable fording to be done, and you will strike numerous stretches of deep sand, which, by the way, can be more easily negotiated if you have wide tread tires, and strips of canvass to put under the tires for traction when very bad. The middle of October will be all right.

#### TO PHOENIX, ARIZ.

Sioux City, Iowa—Editor Motor Age—During the month of October I shall drive across country to Phoenix, Ariz., and would like to know the best route.—T. E. Stevens.

Route to Omaha, Neb., through Salix, Sloan, Whitney, Onawa, River Sioux, along the bluffs to Missouri Valley, Honey Creek, Crescent and Council Bluffs, and you will find this 109 miles.

You can go through Nebraska to Den-

ver over the Omaha-Denver transeontinental highway, then south through Colorado to New Mexico, or follow the Meridian road into Kansas as far as the Santa Fe trail at Newton, then west to Colorado and through the southern corner to La Junta and Trinidad and into New Mexico.

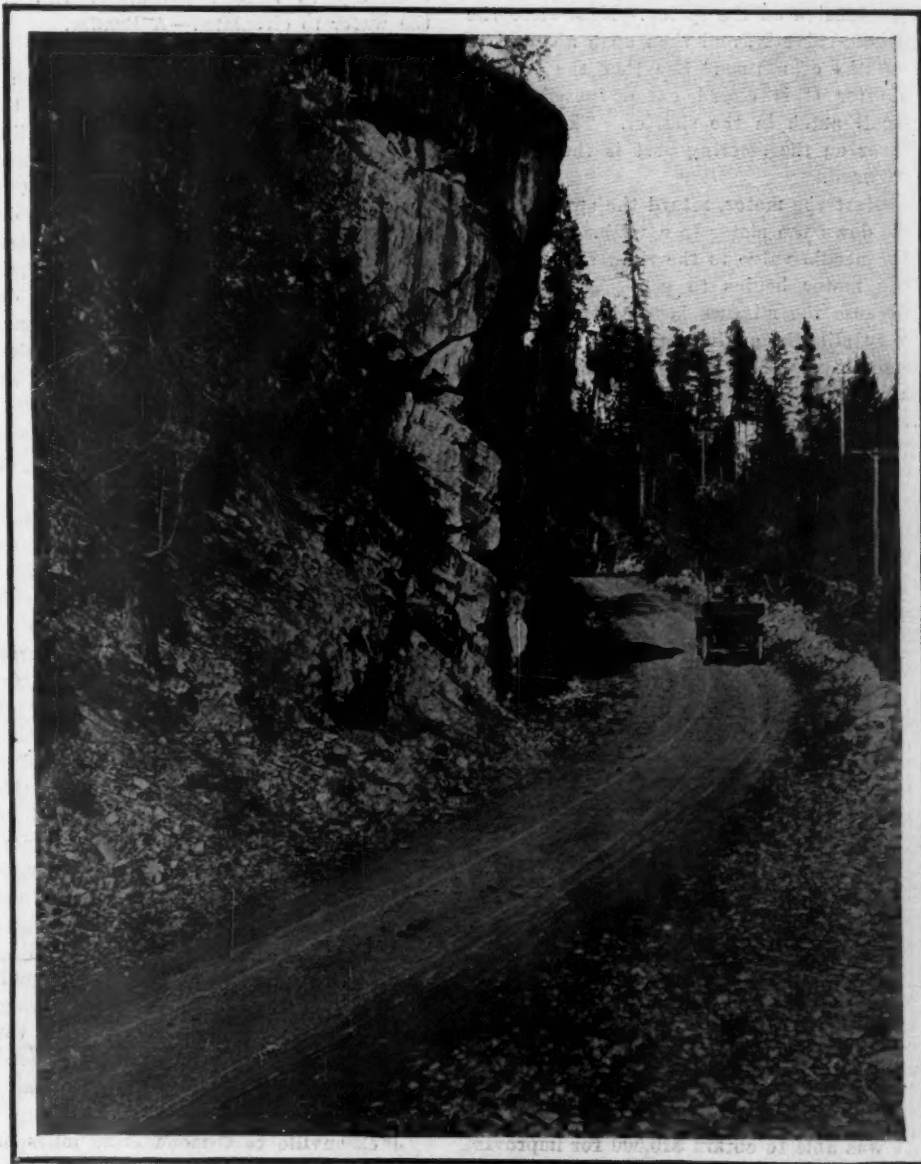
Over the Omaha-Denver trail it is a run of 166 miles to Hastings, the intermediate towns being Millard, Gretna, Ashland, Waverly, Havelock, Lincoln, Emerald, Milford, Friend, Exeter, Fairmont, Sutton, Saronville, Harvard and Hastings. McCook is then reached after 146 miles of travel through Junita, Heartwell, Minden, Axtell, Holdredge, Atlanta, Oxford, Edison, Arapahoe, Holbrook, Cambridge, Bartley, Indianola. McCook to Sterling, Colo., is by way of Culbertson, Beverly, Palisade, Hamlet, Wauneta, Imperial, Lamar, Holyoke, Paoli, Haxton, Fleming, and Galien, and is 167 miles.

Next comes the stretch of 146 miles to Denver through Hillrose, Brush, Fort Morgan, Bennett, Watkins, Denver. Be sure and have enough gasoline to carry you the 64 miles from Fort Morgan to

Bennett, as that stretch is without a town.

Traveling south the towns are Littleton, Ascequia, Sedalia, Perry Park, Palmer Lake, Monument, Custard, Breed, Pike View, Colorado Springs, Fountain, Buttes, Pinion, Bragdon, and Pueblo, which is 112 miles. Then comes Trinidad at 90 miles, going through Walsenburg, Acular Chicosa, and Bowen.

Trinidad to Las Vegas, N. M.—141 miles—is Starkville, Gallinas, Morley, Raton, Dorsey, Maxwell, French, Springer, Rayado, Colmor, Nolan, Wagon Mound, Watrous; Las Vegas to Santa Fe—76 miles—is Tecolote, Bernal, San Jose, Pajarita, Rowe, Pecos, Glorieta, Canocito, Santa Fe. To McCarty's it is 149 miles by way of La Bajada, Domingo, Algodones, Bernalillo, Sandia, Alameda, Albuquerque, Atrisco, Laguna, and Cubero; continue 134 miles to Nation's ranch, Laguna Salina and Springerville. To Globe is through Cooley's ranch, Rice and Cutter being 148 miles, and then to Phoenix 115 miles over a fine stretch of road through Roosevelt, Goldfield, Mesa, Frankenburg, and Tempe.



ON PARK-TO-PARK HIGHWAY NEAR KALISPEL, MONT.

## Adjustment of I. H. C. Car Particulars of Construction and Adjustment of Principal Parts of High Wheeler Given

**F**RANKFORT, Ind.—Editor Motor Age—What is the bore and stroke of the 1912 I. H. C. motor wagon?

2—What make of carbureter is used, and please explain the adjustment of it?

3—What make of magneto is used on this car? Give wiring diagram.

4—What kind of transmission is employed?

5—In what way is the compression released when cranking this motor?—A Reader.

1—The bore and stroke are 5 by 5 and  $4\frac{1}{2}$  by 5, the former, the air-cooled model, and the latter the water-cooled.

2—The carbureter is a Schebler, shown in Fig. 1.

To adjust the carbureter, see that the air-valve A just seats. This can be felt with the fingers when the throttle is open. It is adjusted by the adjusting screw S, which is turned to the right to increase the tension on the spring. Next close the needle-valve N, and then open about five-eighths of a turn. See that the cold-air shutter C is closed except possibly the small notch in the shutter. The throttle lever on the steering post is then pushed forward.

Start the motor, retard the spark, throttle down the motor to a walk. Then turn the needle valve to the right slowly, until the motor begins to pop. This will be because the mixture is too lean. Open it very slightly again until the motor runs smoothly. Then open the throttle and advance the spark until the motor is running at high speed. Turn the screw S to the left until the motor misses or backfires, when it should be turned to the right again until it runs smoothly. The lock nut L is then screwed down to retain this adjustment.

3—The wiring diagram of the Heinze ignition system which is used on this car is shown in Fig. 2. The I. H. C. uses a Heinze magneto.

4—The I. H. C. gearset is of the individual clutch type, with the gears always

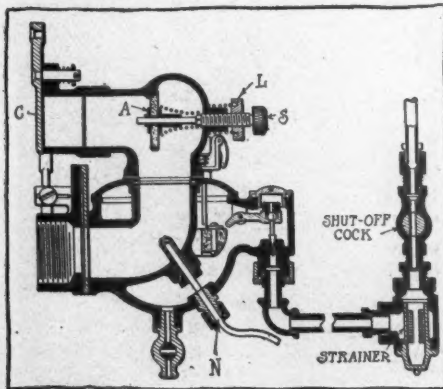


FIG. 1—SCHEBLER CARBURETER OF  
I. H. C. CAR

# The Readers

## Carbureter Adjustment on International Harvester Car— Horsepower Not Reliable Gauge of Gasoline Economy —Forward Cylinders Carbonize Most

in mesh. Selection of gears is obtained through dogs and pawls in the gear hubs. It affords two speeds forward and one reverse.

5—There are priming cups on the tops of the cylinder that may be used for this purpose. No regular provision for this is made.

### POWER AND FUEL CONSUMPTION

Piper City, Ill.—Editor Motor Age—Is a two-cylinder car of from 16 to 18 horsepower cheaper to operate than a four-cylinder car of from 20 to 22 horsepower?

2—In a thermo-syphon system is it necessary to have the radiator full for the water to circulate?—A Reader.

1—This is a question that cannot be definitely answered. To discuss it from a theoretical standpoint, however, the smaller motor would consume less gasoline per charge than the larger, as the volume of its cylinders would be less than that of the four. On the other hand, no two designs will operate with exactly the same density of mixture, and it is quite likely that the smaller motor, because of the decrease in mechanical and thermal efficiency in motors as their size is decreased below certain limits, and the fact that it has but two cylinders, would require a somewhat richer mixture, when operating under similar conditions than that required by the four.

Of course, there can be no means of determining how the effect of the volume and the thermal and mechanical efficiency would balance; whether the decrease in volume would overbalance the waste of the more inefficient design, or vice versa, in two motors equally well designed for their respective types, of the sizes you specify. It is quite likely, however, that in sizes so nearly the same, that the difference would be very slight. A four of this size needs to be very well designed to show any considerable degree of efficiency, due to the fact that its cylinders are small, and therefore demand that the rest of the motor be made correspondingly light and finely balanced if great efficiency is to be had. As against this, though, the small motor is required to stand up under usage but very little different from that of the big six, and its component parts must therefore be made with a much greater margin of strength than those of the larger motor, to which the strains and loads of service are less, in proportion. To narrow the discussion down again the actual econ-

omy of fuel, either motor could be so designed that it would exceed the standard of the other type in this point, but considering the balance of the whole design, it is unlikely that any appreciable difference would obtain in two motors correctly balanced for their design, in fuel economy.

3—No, not any more so than systems wherein a pump is used to induce circulation. The inflow at the top is caused by the rising of the water in the jackets, due to the heat, whence it runs down through the radiator, as it cools, and flows back to the lower portion of the cylinder jackets, and it will continue to circulate as long as there is any water in the radiator.

### FRONT PLUGS FOUL

Sauk Center, Minn.—Editor Motor Age—I have a 1911 model T Ford, the first time I took out the spark plugs for cleaning I noticed that the two nearest the radiator were very dirty, while the two next to the dashboard were perfectly clean. The first two cylinders are getting much more oil than the other two, although the former do not show any sign of wear more than the latter. Can Motor Age suggest a remedy for this?—Reader.

Since carbon is the result of oil in such a degree of excess that it is burned in the cylinder, it is to be inferred that the two front cylinders of your motor are receiving an excess of lubricant. Unequal feed to various cylinders of a motor is to be attributed to various and sundry causes, among which are: loose piston rings, which do not fit the cylinder snugly, allowing too much oil to enter the combustion chamber; worn cylinders; scored cylinders, the scorings forming tunnels past the piston rings through which an excess of oil is allowed to pass; oil level carried too high; or too much splash.

Considering the first possibility, the piston rings may become loose through excessive wear. This may be the result of running the motor dry at some time, ill fitting rings in the first place, soft material in the rings, or merely the result of legitimate wear. Loose rings may be the result of loss of temper, caused by inferior metal or treatment thereof, or to overheating the engine at some time. Other causes are the distortion of the rings, due to faulty material or workmanship, or to the lining up of their slots, affording a continuous passage for the oil, even though each part may be in perfect condition.

Cylinders become worn because of lack of lubrication, ill fitting rings, or misalign-

# Clearing House

Steam Not Dangerous if Radiator Is Full and Does Not Spout Water—Reasons for Customary Crank-Angle—Reader Discusses Gasoline Cost

ment of the piston or its mountings. They become scored by broken piston rings, foreign matter in the cylinders, projecting wristpins, or valve grinding compound which has been allowed to find its way into the cylinder by a careless repairman.

It would appear on first sight as though a high oil level would affect all cylinders alike, but this is not necessarily so. The rear cylinders may have their rings too tight so that the oil level is required to be carried too high in order to properly lubricate them, at the expense of feeding the front cylinders an excess of oil. Too much splash may be the result of bent oil spoons, which owing to their angle splash more oil to the front cylinders than to the rear ones. The rear spoons may be bent so as not to splash sufficient oil, so that the oil level has to be carried excessively high to allow them to be supplied.

Another cause of uneven carbonization, rarer, and less likely, but possible, is an air leak in one side of the manifold, which thins the mixture to one pair of cylinders, to such an extent that the carburetor must be adjusted to produce an abnormally rich mixture to counteract this effect, with the result that the other cylinders, farther from the air leak, and therefore less affected by it receive an over-rich mixture, with resultant carbonization. Loose connections to the spark plugs on the front cylinders would increase the resistance to the high-tension current, and retard the timing of the spark thereby. Late spark advance always has the effect of increasing the carbon deposit.

The remedy of these troubles, is to inspect the parts most likely to be the seat of the trouble, and if imperfect, to repair or replace them.

## OVERHEATING THE ENGINE

Kimball, S. D.—Editor Motor Age—I have been told that a too lean mixture will heat a motor car engine as quickly and badly as too rich mixture. What do you know about it?

2—Granted that an engine runs perfectly, has all kinds of speed and consumes the minimum amount of gasoline, can it overheat an engine?

3—Taking the case of an E-M-F engine, which uses the splash system, how long and how far is it safe to run such an engine with the water boiling and steaming, provided that the radiator is kept full all the time, this in case of heavy roads on low gears?—C. R. Tinan.

1—It will not.

2—No.

3—Provided there is no steam in your jackets, no harm can come of boiling water, provided your radiator is kept full. Steam in the pipes or jackets will make its presence manifest by spouting water from the radiator cap. This is the danger sign. As long as only steam escapes, you are safe, for it is formed, then, only in the air space at the top of the radiator. Boiling water is of practically uniform temperature; steam may be heated indefinitely.

## RAMBLER RATIO

Penn Yan, N. Y.—Editor Motor Age—With a 36-inch wheel and with sixteen teeth on the small sprocket of the speedometer, how many teeth should there be on the larger sprocket so as to give the correct speed?

2—What is the speed of the model 53 Rambler?

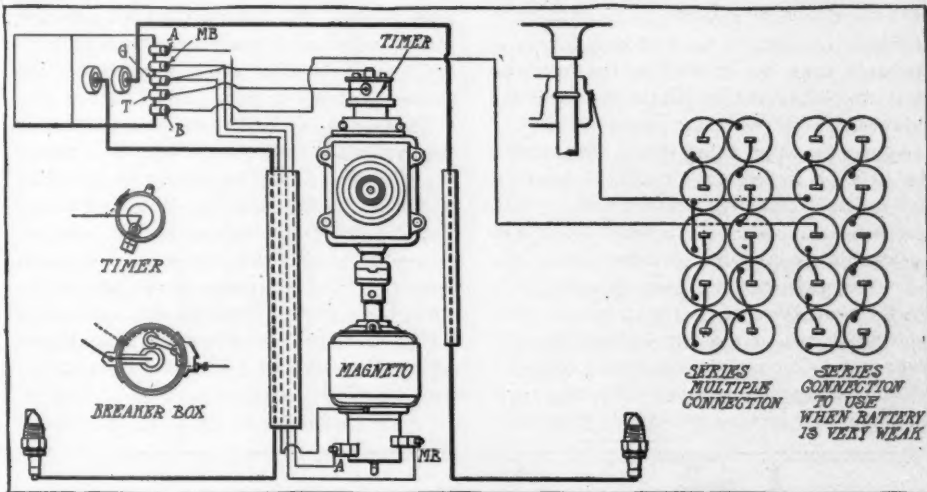


FIG. 2—WIRING DIAGRAM OF HEINZ SYSTEM USED ON I. H. C.

What are the gear ratios of this model?—L. S. A.

1—By the formula given for speedometer sprocket sizes, in the issue of August 29, a sixteen tooth small sprocket on a 36-inch wheel takes a 72-inch large sprocket. The size of the large sprocket is found if the small sprocket has 16 teeth by multiplying the inch-diameter of the wheel by two.

2—The maximum speed of this model is said to be about 40 miles per hour.

3—The gear ratio or direct drive is 3.5-7 to 1, on intermediate 6 to 1, on low 8 to 1, and on reverse 11 to 1.

## Angularity of Cranks

Why Cranks Are as They Are, and Effect on Firing Order and Running Balance

URBANA, ILL.—Editor Motor Age—Why is it that on a four-cylinder and four-cycle engine that the first and third crank cannot or at least is not set at 350 degrees and the second and fourth at 180 degrees?

2—Is the Ford steering wheel considered as safe as the worm and sector type, and what is the maximum speed of the Ford car?

3—Is the Remy magneto used on the Moon and Enger cars high or low-tension?

4—How many volts does it require to force the current across a 1/32-inch air gap of a spark plug under compression pressure?

5—What kind of ignition system and carburetor does the Marmon car use?

6—State high or low-tension and the kind of coil. Give same answer on the Thomas Flyer, National, Chalmers.—Chauffeur.

1—The reason for the universal practice in the design of four-cylinder crankshafts of turning the first and fourth crankshafts at 180 degrees angle, and the second and third at 360 degrees, is that better balance is said to result from the resultant firing order. If the throws were alternate, the first and third being at 180 degrees, and the second and fourth at 360 degrees, the firing order would be 1-2-3-4. This would

mean that the pressure on the crankshaft, and upward on the engine cylinders, would travel from one end of the motor to the other in waves, tending to raise first one end of the motor, and then the other, with the result that the motor would rock violently in the chassis. By so designing the crankshaft that the firing order is more evenly distributed, the pressure is balanced, each alternate explosion bringing its pressure to bear on a different portion of the motor, instead of two explosions occurring at one end of the motor, and then two more at the opposite end. Fig. 3 shows a motor firing in the se-

quence 1-2-3-4, with the crank throws alternating, the effect of the unbalanced pressure being shown by the broken lines. Fig. 4, on the other hand, shows a motor with the crank throws arranged in the standard manner, with the firing order 1-3-4-2, with the better balance that is apparent.

Dissatisfied with following standard practice, without a practical reason for so doing, one manufacturer several years ago built a motor which fired 1-2-3-4, and on installing it in a car was hardly able to keep it in the chassis. On changing the firing order, by installing a standard crankshaft, the difficulty was removed immediately.

Another maker, however, disagrees with this practice, maintaining that difficulties with motors which fire 1-2-3-4 are the result of poor balance of the component parts of the motor, rather than of actual rocking. This maker maintains that now since the importance of perfect balance of the moving parts of the motor is generally understood, and that even the static balance of the flywheel, etc., is insisted upon, that any firing order desired may be adopted that will adapt itself to the location of the bearings, and the design and balance of the crankshaft. It is asserted that a six-cylinder motor with a firing order of 1-2-3-6-5-4 shows no increase of vibration over one wherein the firing order is broken up and distributed as in the sequence 1-4-2-6-3-5, and that therefore a four, designed in good balance, could be fired in the order 1-2-3-4.

Which is right is hard to say, but it is probable that the truth lies between the two; and that if the motor is perfectly balanced in its working parts, it may be designed for any firing order, but unless the balance is perfectly true, the progressive order of firing will induce rocking that would be ruinous to both the engine and its associated chassis members.

2—Yes, this steering gear operates on a simple reduction of 4 to 1, which with as light a car as the Ford provides complete and safe control, and considering the difference in cost between this type and the worm and sector type that is saved, the

Ford company regards this type as superior to it. The Ford car should be able to do 40 miles per hour.

3—The Moon and Enger cars use high-tension systems.

4—Approximately 12,000 volts under the usual compression.

6—The Marmon use a dual two-point ignition system, with a Remy magneto, and a float-feed single-jet, water-jacketed Schebler carbureter.

7—The Marmon uses a high-tension system with a Remy vibrating coil. The Thomas uses a high-tension system with either a Bosch or Eismann vibrating coil, on option, to correspond with the make of magneto selected by the purchaser. The National uses a high-tension system, with a Bosch vibrating coil. The Chalmers uses a high-tension system with a Splitdorf coil.

#### HIGH COST OF GASOLINE

Du Bois, Pa.—Editor Motor Age—What are we going to do about the high cost of gasoline? This is the important subject which all car owners should be considering. Since spring, the price of gasoline has advanced from 11 to 20 cents a gallon delivered in barrels. The gravity claimed for this gasoline is 64 per cent, but very seldom registers this on test.

The reason given by the refineries for this excessive price is the scarcity and the increasing amount of its use. One company practically controls all the gasoline of the world. Since this company's dissolution, this spring, the alleged competition among the different companies has forced gasoline higher and higher, until in the short time of 3 months, it has almost doubled in price.

Another point worthy of note is that the quotation of this company's stocks have advanced step by step with gasoline. It is well known that in cities and towns farthest from the refineries, where there is small competition, gasoline is much cheaper than in towns surrounding the refineries. If the price is only controlled by the scarcity, why should western Pennsylvania be paying 4 cents more a gallon than New York city?

In the refining of gasoline, for every

gallon of gas produced 4 gallons of kerosene also appears. As the demand for gasoline has increased, the use of kerosene has decreased, making it appear much as if the gasoline user is paying for the kerosene which the refinery is unable to dispose of.

What is going to be done about it? It is up to the motor car people of today to get busy on this proposition and devise a way to overcome this high cost. Are we going to allow the price to go on soaring until only a millionaire can afford to operate a car? What side of the ledger will the upkeep of a truck be with the high cost of gasoline in comparison with horses? Are we going to equal England and France in their prices of 37 and 40 cents a gallon? At present, the Royal Automobile Club of England is investigating the excessive cost. 6½ cents covers the expenses of delivery at Thames Haven dock with a duty of 6 cents more, leaving 24½ cents on every gallon clear profit.

The foreigners are building their engines with the idea of maximum power from the minimum gasoline, and in so doing have built small-bore and long-stroke motors. The American manufacturers have copied this idea to some extent the last 2 years, but whether for the idea of low consumption of gasoline, they have not made known. The manufacturers must be very conservative in cutting down bores, as our road conditions are entirely different from the foreigners, and it will be some years before they will be in the condition which these small-bore motors demand. Another point which our American manufacturer has not fully absorbed is that the foreigners use four-speed transmission to help their small motors.

The high cost of gasoline is vital to the manufacturer of cars and carbureters, for the high cost of upkeep will kill a great many sales. The market which has just been opened for cheap cars will be the worst sufferer from the high cost of upkeep.

Kerosene and benzine, now selling for 11 and 16 cents, are the only cheap fuels which are in any way suited for engine use. Kerosene in its present form is

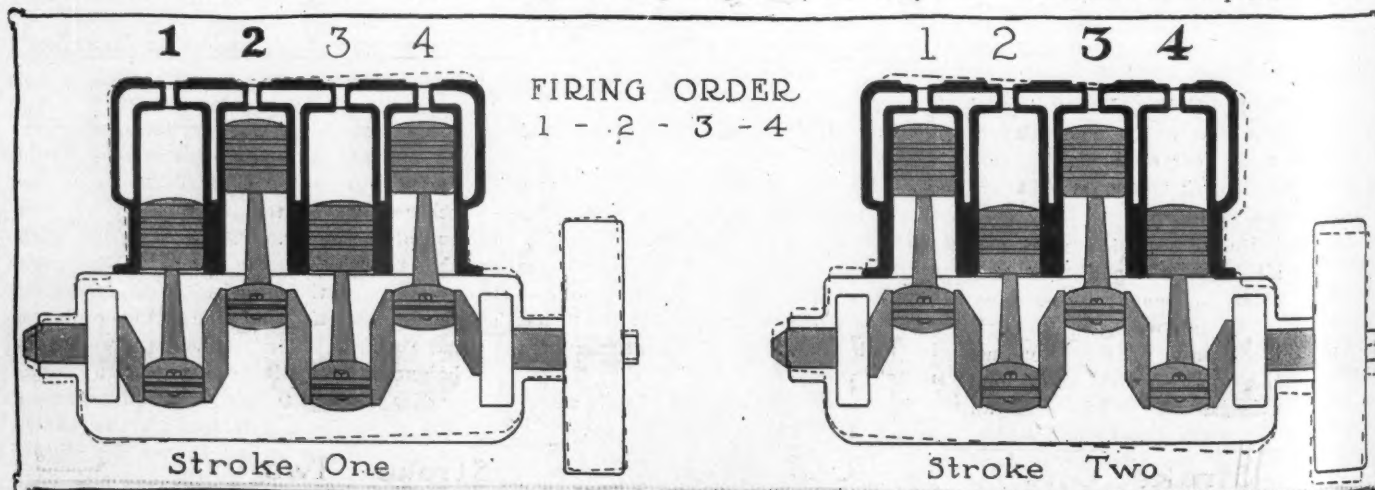


FIG. 3—EFFECT OF ALTERNATE CRANK-ANGLES ON FIRING ORDER AND RUNNING BALANCE

hardly suited for engine use, as it will only generate a gas in a hot engine, and leaves an excess of carbon. The warming-up process could be taken care of by building a small tank within the large one and using a two-way valve. After warming the engine with gasoline which would be carried in the small tank, the kerosene could then be turned on. If this necessitated the adjustment of the carbureter, it now being equipped with a dash adjustment. But to devise a way to overcome the carbon, that is a different matter, and one for the manufacturers to investigate.

Benzine is our only relief, and yet it is a great deal higher at 16 cents a gallon than it should be. It is not very well known that benzine contains more power and mileage to the gallon than gasoline, its only disadvantage being the difficulty of starting in a cold engine. Now that the cold weather is near, the difficulty will be more pronounced than in the summer, but would be a very easy matter, most cars can be remedied by priming or the double tank, which I have previously mentioned. The present engines and carbureters are well suited to this fuel and some will not even require the adjustments to be changed. Since we have the self-starter, we can afford to have our engines start harder. If people would use more benzine, it would not only bring down the cost of gasoline, but would be more profitable to the consumer.

In the fall of 1910, a test was made under the auspices of the Chicago Motor Club, with benzine as fuel. A Falcarr, with a Rayfield carbureter, was used, and it was demonstrated that more mileage and power to the gallon could be obtained than with gasoline. Only once was trouble encountered in starting, which was caused by an all-night stop in a cold garage. This difficulty was remedied by priming the cylinders. Since this test, no other progress has been reported by the manufacturers of cars and carbureters towards the investigation of a substitute for gasoline.

It is up to us, through our clubs and motor publications, to fight this advance, and we could make a very creditable fight

as 860,000 pleasure cars were registered in the United States, in the registration taken July 1. Let us get together and start a campaign for lower prices. Why can't the American Automobile Association conduct a campaign through the clubs? United we can fight, but separately we shall fail.—W. J. Marlin.

#### SUGGESTS CAUSE OF KNOCK

Chicago—Editor Motor Age—Referring to the answer to X Y Z on page 27 of the September 19 issue of Motor Age, it may be that the trouble the correspondent is having is caused by a loose wrist pin, which has worked over to one side of the cylinder wall and the wrist pin is sticking out of the piston, making a groove in the cylinder wall of the piston and cutting a groove in the cylinder wall, so the wrist pin is striking the end of this groove at the end of each stroke, making it click and clatter.

#### SPECIFICATIONS FOR YEAR 1920

Jefferson, Ia.—Editor Motor Age—At this time of announcement of 1913 models perhaps a little harmless speculation by an outside observer of motor car tendencies may not be out of place. What will the purchaser of a moderate priced car get for his money in, say, a 1920 model? Of course any such prognostication must be based primarily on the idea that the public will get what it wants, and that it will want what is best.

Apart from any knowledge of engineering problems and desiderata, it would seem that the light six is to be the predominant car of the immediate future. This motor will probably be of the long-stroke type, with a moderately small bore; to hazard a concrete guess, say  $3\frac{3}{4}$  by  $5\frac{1}{2}$  inches. It would appear at present that the poppet-valve construction will be retained, at least for the medium priced car. That this motor will be equipped with an electric self-starting, lighting and ignition system seems almost certain. As to the gearset, I should unhesitatingly agree with our four-speed friends that that will be the prevalent type in a few years. Whether direct drive will eventually be on third or on fourth speed is something that the

engineers will have to settle, with the co-operation of drivers. In any case, there will probably be a power tire pump on the gearset, and perhaps a drum and cable to take the place of the proverbial team of mules in a mud hole.

To one who has seen the English results in the matter of tire economy with wire wheels—about 50 per cent over wood wheels in the same service—there will appear to be little doubt that the wire wheel, demountable, probably, will be a universal equipment before the year I have mentioned. The spare wheel probably will be carried on the rear of the car.

To aid the four-speed gearset in getting the most out of a comparatively small engine, we may expect to see the stream-line body developed for the moderate priced car. Clean running boards, four usable doors, and a requisite beauty of line will demand the development of some sort of luggage compartment within the body. Unless springs and roads improve very materially, the public will be demanding, and getting, shock absorbers as standard equipment on all but the cheapest cars.

Though I have driven both, to me the matter of left or right-hand drive is still an open question. In the city, left-hand drive is doubtless better; in the country, right-hand is still preferable, on account of the numerous narrow graded roads. It may be that this matter will be optional. The steering post angle will almost certainly be adjustable, to meet the requirements of drivers of different builds.

Additional equipment will probably be about what it is now on the more liberally equipped cars. That is to say, top, windshield, speedometer with or without clock, tools, etc.

How this car is to be built, and built in a thorough, durable way, and sold at, say, \$1,500, I confess has not worried me greatly. Possibly greater economies in the matter of overhead expense and sales methods will make it feasible. At any rate, if we look back at, and argue from, the steadily increasing values of each succeeding year, we cannot doubt that it is both possible and probable that such value will be offered.—Charles D. Enfield.

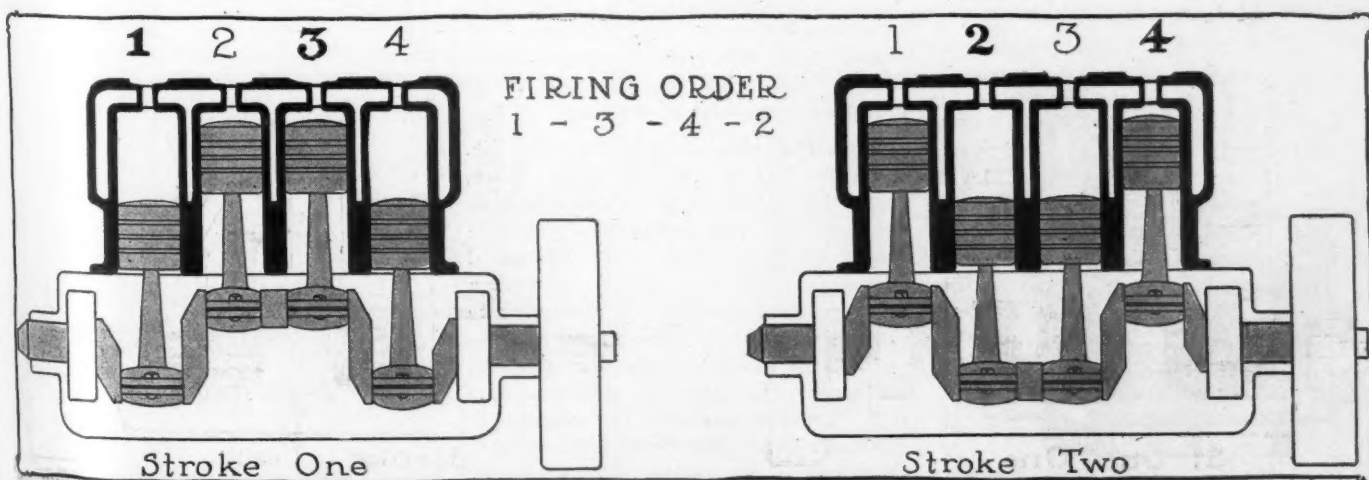


FIG. 4—HOW STANDARD CRANK-SETTING DISTRIBUTES PISTON THRUST TO BALANCE MOTOR

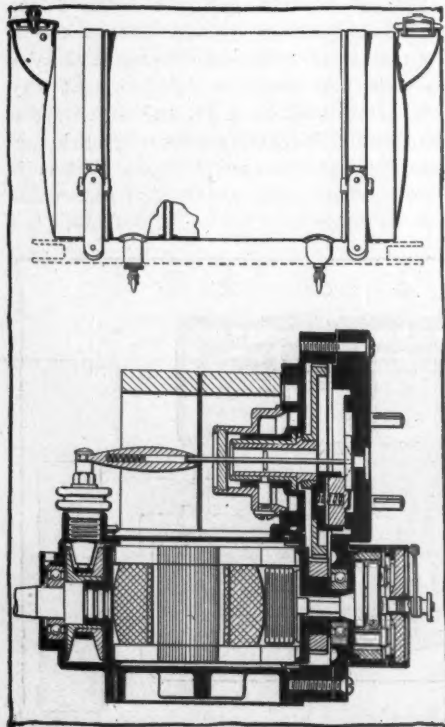


# Current Motor Car Patents

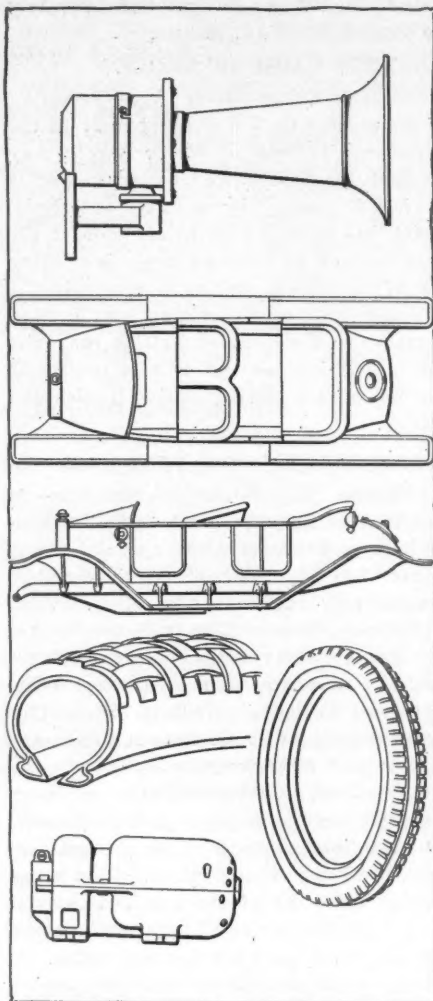


**MERCEDES Clutch-Actuating Linkage**—No. 1,039,495—To Paul Daimler, Untertürkheim, Stuttgart, Germany, assigner to Daimler Motoren-Gesellschaft, Untertürkheim, Stuttgart, Germany. Filed September 16, 1911; dated September 24, 1912. As an operating means for a double cone clutch, the purpose of this invention is to bring the two outwardly engaging members together, and out of engagement with their respective friction mates, by means of a single thrust of the operating pedal. This is accomplished by mounting the two cones which constitute the operating members on annular integral sleeves, disposed about the driven shaft. These sleeves are of different diameters and telescope the forward within the back sleeve. These sleeves terminate in collars, upon which are mounted ball thrust bearings. These bearings are placed opposing and have rollers secured to their inner races. These rollers bear on a wedge-shaped expanding member which is linked to the operating pedal, so that upon the depression of the latter, the wedge is pressed between the rollers, spreading the thrusts, and by means of the sleeves drawing the clutch cones together. The clutch spring is of course mounted between the cones, and bears only on them, thus obviating the necessity of any thrust bearing for this member.

**Hudson Gasoline and Oil Tank**—No. 1,039,098—To Howard E. Coffin, Detroit, Mich. Filed August 14, 1911; dated September 24, 1912. A tank for runabout bodies, this design consists of a single



SIMMS MAGNETO AND COFFIN'S TANK



Designs Issued Sept. 24, 1912, Dean Electric Signal—Huffman's Motor Car Body with Inset Motor Hood—Jones Non-Skid Tire—Clark Basket-Weave Tire Tread—Gray and Davis Generator Case

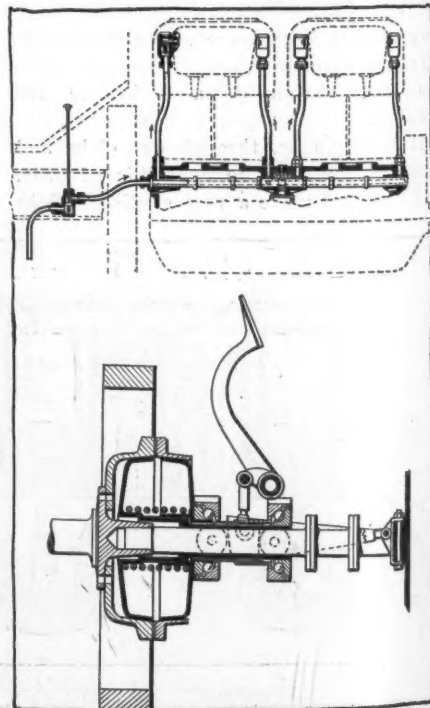
tank provided with a hollow partition dividing the tank into two compartments of different capacities, one for lubricant and the other for fuel. A means is provided for the drainage of the hollow partitioned chamber of any leakage of oil therein from either storage compartment, and for indicating the presence of any fluid within the central chamber.

**Issota-Fraschini Engine Starter**—No. 1,039,504—To Oreste Fraschini, Milan, Italy. Filed June 16, 1908; dated September 24, 1912. This starter is of the compressed-air type, the air being compressed and stored in a tank. From the tank a line conducts it beneath the footboard to the engine. The air is distributed to the cylinders by means of a hollow camshaft, which acts as a rotary distributor, as well as in its usual capacity of valve operation. The individual leads from the camshaft ports lead to the several inlet valves of the cylinders, the rotary camshaft dis-

tributor being so timed as to admit a charge of compressed air on the working stroke of the engine cycle of each cylinder. Upon the starting of the engine, the leakage of air back into the air reservoir is prevented by a suitable check-valve connection to the cylinder. The passage of air from the tank to the distributor is controlled from the foot-board by a foot-button that actuates a plunger-valve in the air line.

**Simms Magneto**—No. 1,039,454—To Frederick Richard Simms, Kilburn, London, England, assignor to Simms Magneto Co., New York, N. Y. Filed October 9, 1911; dated September 24, 1912. A high-tension magneto, this invention consists of a special design for dual systems, having a revolving armature, on which are mounted the revolving brushes. These brushes bear on a stationary commutator, which is provided with connections to the battery and to the cylinder spark plugs.

**Huffman Body Design**—No. 43,046—To Charles F. Huffman, Mason City, Ia. Filed May 15, 1912. This design resembles that of the English Lancashire cars, inasmuch as the dog-kennel hood is eliminated, the engine being placed in the driver's compartment in an inset hood. It differs from the British product, however, in that two seats are provided in the forward compartment, and the engine compartment does not extend so far back. The dash is divided into two sections at the side of the hood, and sheltered by an exceptionally deep cowl. The seats, both front and rear, are farther forward than usual, and hence the car is easier riding.



ISSOTA STARTER AND MERCEDES CLUTCH

# The Motor Car Repair Shop



FIG. 1—RETREADING CASINGS

## Building Up Raw Gum Tread Bands

**A**N uncured tread band is composed of four or more plies of gum, which should be built up as needed on a stock table. Do not begin with the widest ply, but with the second widest, cut the next one  $\frac{3}{4}$  inch narrower, and step up in this proportion in accordance with the number of plies required. Then invert the whole upon the widest ply in such a manner that the widest is at the top and the second widest at the bottom of your tread band as shown in Fig. 2. Apply to the bottom or second widest ply a strip of fabric of proper width for breaker strip. This should not be quite as wide as the cut down. In adjusting the tread band to the case apply this side first. In making up the tread band care should be taken to roll each ply separately and remove all blisters by pricking them with an awl.

## Retreading Cases

In retreading cases cut down to the fabric around the circumference of the case, from  $2\frac{1}{4}$  inches to 3 inches above each bead, according to the size of the case. Remove the intervening tread from the fabric and skive or bevel the exposed edges of the gum. Buff them thoroughly on a wire buffing wheel. Insert a wire coil to hold case rigid and wash carefully with benzine or gasoline. Apply two coats of cement, allowing from  $1\frac{1}{2}$  hours to 2 hours for each coat to dry. Apply raw gum tread made up as described previously, pricking out all blisters with an awl. When this is done stretch a strip of wet muslin—cut at an angle of 45 degrees to the weave—over the tread lengthwise to serve as a surface liner. Over this apply the usual wrapper of wet muslin, drawing this as tight as possible, as shown in Fig. 1. Cure in a pot heater for 45 minutes at 35 pounds steam pressure.

It will be found that the operation of applying the new tread is one requiring considerable physical strength, especially

## Repairs of Motor Tires

### Part II

in the wrapping operation. This should not be attempted unless qualified in this respect, as it is of utmost importance that the application should be firm and uniform.

### Treating Rim-Cuts

Remove gum, including bead strip, from the side of the case for a space of from  $1\frac{1}{2}$  inches to 2 inches above the bead. Step down one ply of fabric all around, beginning about  $\frac{1}{2}$  inch from the exposed edge of the gum and extending down to the toe of the bead. Clean with benzine and apply two coats of cement, drying each 2 hours. Replace fabric stepped out and if the case is rim-cut through, extend the fabric around the bead and inside the case about one-half the circumference of its cross section. Over this put one ply of fabric to extend from bead to bead. Replace the bead strip with fabric. Fill

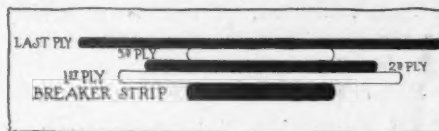


FIG. 2—BUILDING UP TREAD

in the gum removed with gum  $3/32$  inch thick and cure 45 minutes at 50 pounds steam pressure in a cavity vulcanizer.

### Recovering Cases

Remove all the gum from bead to bead, also the bead strip. Buff the fabric lightly if necessary to completely remove the old friction. Wash well with benzine or gasoline and apply two coats of cement to the sides to a point from  $2\frac{1}{2}$  inches to 3 inches above the beads, according to size of case. Dry each coat  $1\frac{1}{2}$  hours to 2 hours and apply a strip of fabric from 2 to 3 inches wide around the sides as a

bead strip, extending it down over the bead to the toe. Above the beads apply cushion gum  $3/32$  inch thick in a strip  $2\frac{1}{2}$  to  $3\frac{1}{2}$  inches wide—skive the upper edge. Cover remaining exposed fabric with one ply of  $3/32$  inch thick gum. Cure 30 minutes in cavity vulcanizer at 50 pounds steam pressure, after which apply raw built-up tread as described heretofore, or semi-cured band.

### Repairing Inner Tubes

The edges of the cavity should be trimmed and washed out, the inside with benzine, as shown at A, Fig. 3. It is then coated with cement and allowed to dry for 2 hours, at which time a patch of repair sheet is inserted, first dipping it in benzine as a lubricant. This patch should be  $1\frac{1}{2}$  or 2 inches larger than the hole and cut square. The operation of inserting the patch is illustrated at B. The patch is folded and inserted with a pair of pliers. The cavity is then filled up with gum and presents the appearance indicated at C, after which it is cured from 15 to 20 minutes at 50 pounds steam pressure on a flat press.

### Semi-Cured Retreading Bands

For applying semi-cured retreading bands, prepare the case as for raw-tread band, using cement. Carefully buff the retreading band, wash with benzine or gasoline and coat with cement twice, allowing 2 hours for each coat to dry. Apply to the band one ply of cushion gum  $1/64$  inch thick, and add a breaker strip of fabric. Then adjust the treading band to the case. It is well to use a layer of dry muslin under the band to prevent it sticking, pulling this out gradually as you adjust the band to the case. Proceed as before, but cure 30 minutes at 35 pounds steam pressure in pot heater. Omit, however, when wrapping, the wet surface liner which is used in connection with raw-gum treads.

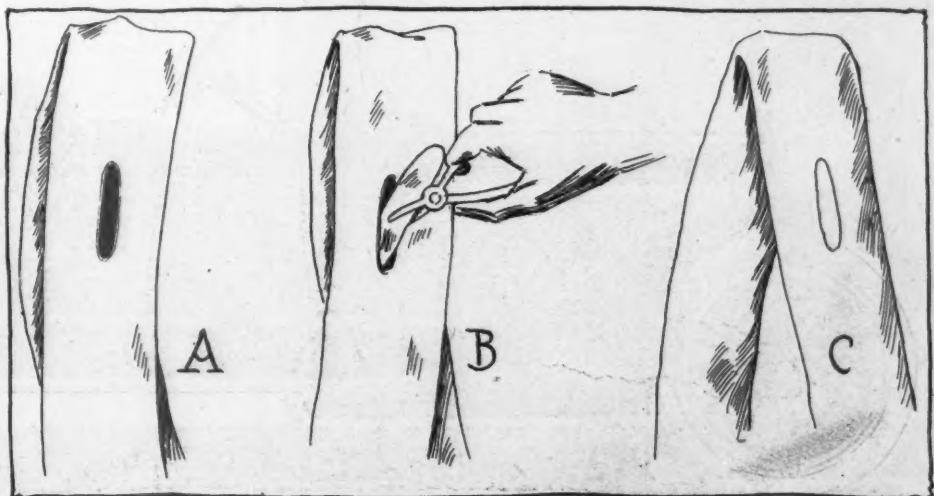
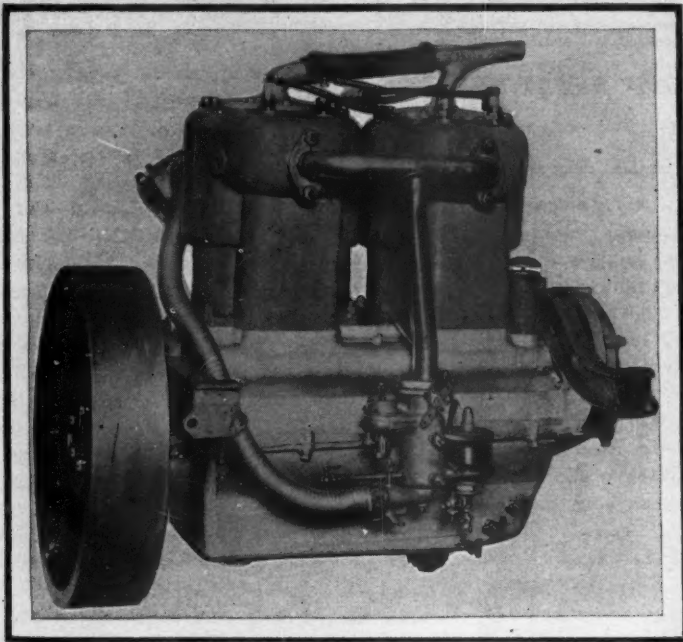


FIG. 3—STEPS IN REPAIRING INNER TUBE

# 1913 Moon Line Features Three Chassis



INTAKE SIDE OF MOON 48 MOTOR FOR NEW YEAR

**E**XTENSIVE refinement and development has been made in the Moon line for the coming year. This year's models have been enlarged and improved, and a brand new six added. Most notable in changes for 1913 are the left-hand steer and center control, to be found in all the new models, the electric starting and lighting system and the substitution of a light pressed-steel torsion arm for the previous radius rods. The new models are model 39, which is a development of this season's 30; model 48, which is the outgrowth of the 1912 40, and the 65 six-cylinder car, which is the initial invasion of the six market by the St. Louis concern.

Model 39, so named for the brake horsepower claimed for it, is in general makeup a characteristic Moon product, embodying

year's car by the modified S. A. E. rating is 39.2, while that of last year's motor, by the same formula, gives 43.2, each at 1,600 revolutions per minute.

Model 48, whose claimed actual horsepower corresponds to its designation, is in general makeup the same as its smaller brother. The motor is identical in design except as to size with the 39, having a bore of  $4\frac{1}{2}$  inches by 5 inches stroke. The multiple-disk clutch sliding gearset, torsion system and rear axle are the same as the smaller model. It has a wheelbase of 121 inches.

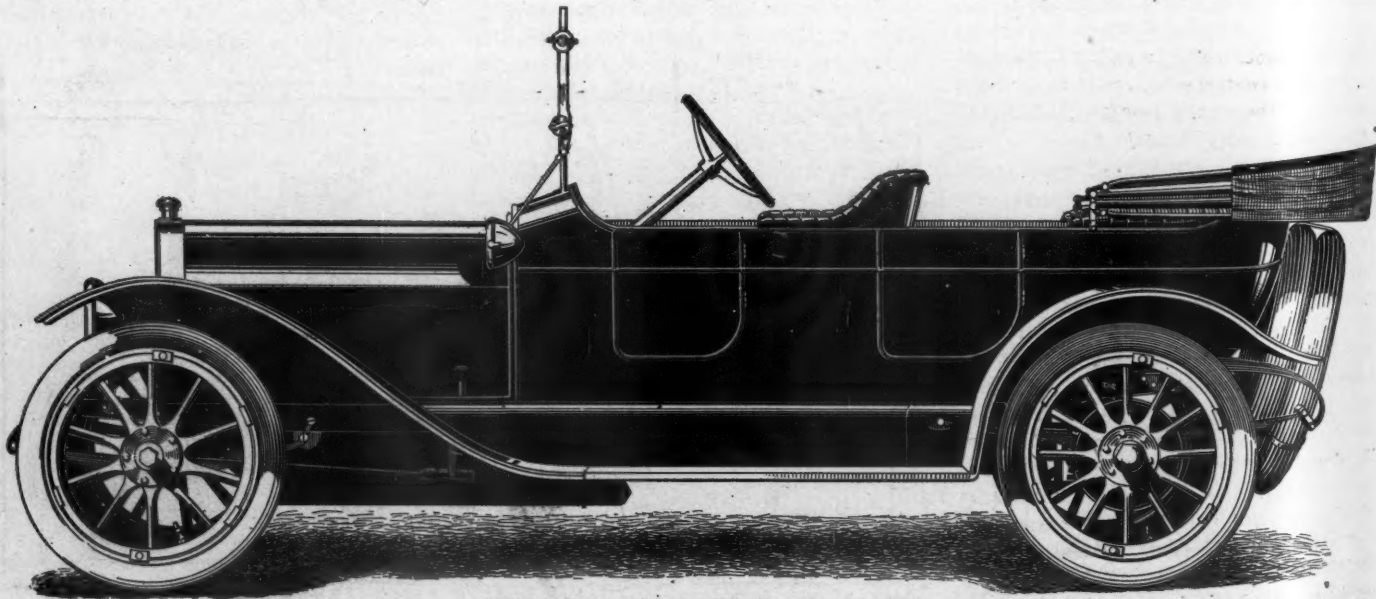
Model 65, which is the new six, has a six-cylinder motor with cylinders 4 by  $5\frac{1}{4}$  and is claimed to deliver 65 horsepower on the brake. The transmission system is of similar design to the four-cyl-

## St. Louis Maker Continues This Season's Fours with Minor Changes and Brings Out Medium-Priced Six for 1913

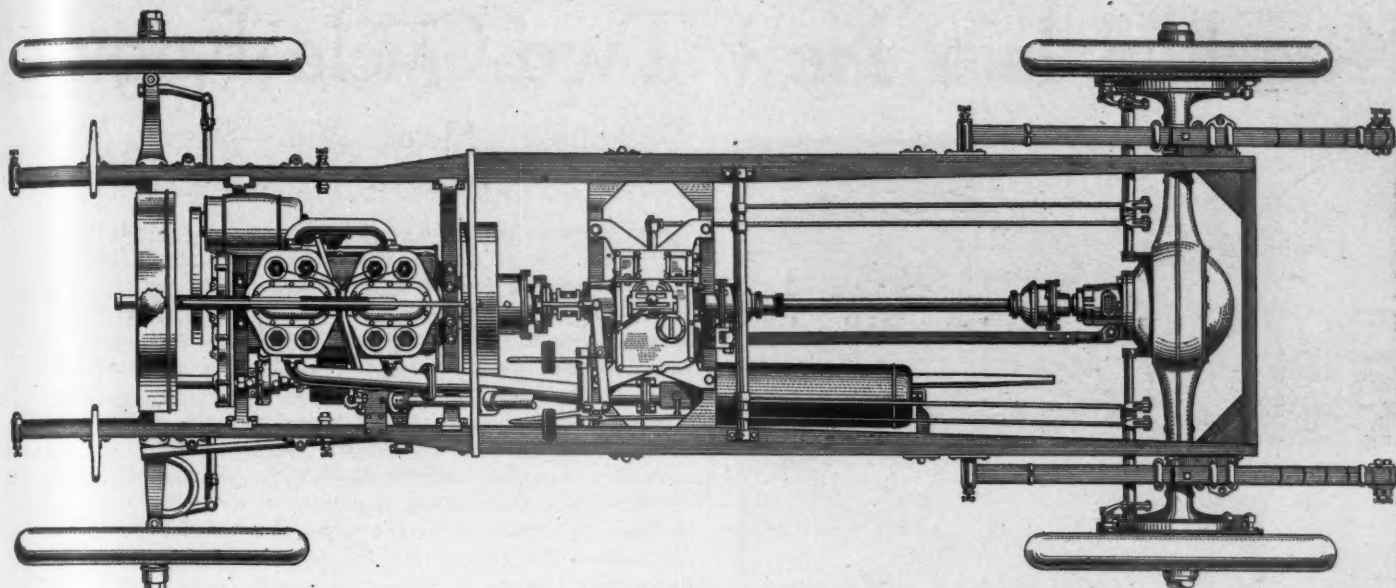
a T-head, four-cylinder long-stroke engine; a multiple-disk clutch; three-speed selective gearset, and a floating rear axle mounted on a 116-inch wheelbase. The cylinder dimensions of this model are 4 by  $5\frac{1}{4}$  inches, bore and stroke; the ratio of 1:1.43 of bore to stroke being slightly greater than that of the  $4\frac{1}{2}$  by 5 motor of this year whose ratio is 1:1.11. The horsepower of next

der model, but, is of heavier structure. The magneto on this model is of Bosch manufacture instead of Remy as on the smaller ones. The wheelbase of this model is 132 inches.

The most interesting feature of the new line is the electric starting and lighting system. This device is of special Moon design, built by the Wagner Electric Mfg. Co., of St. Louis. The outfit is in the form of a single unit, independent of ignition, and employs but one system of wiring, viz., a simple series plan. The motor-generator is mounted behind the clutch, and is chain-driven from the clutch shaft through a planetary gear, which affords the reductions of 2.7 to 1, direct, for generating, and 15 to 1 through the gears, in starting. The dynamo is multiple-wound and equipped with two commutators, one for use as a motor and the other as a generator. The brushes of these commutators are controlled for the change from generator to motor and vice versa by means of a lever, projecting from the generator base, which is linked to the planetary brake band lever, being controlled conjunctively by a starting pedal on the foot-board. The starting gearbox is mounted on the forward end of the armature shaft, being normally in direct drive, with the generator commutator brushes in action. It is locked so by means of three cams placed upon the planetary spider. In starting, these cams are released, the starting brushes brought into action and the band contracted, by the movement of the connecting levers, converting the machine from a generator, at a slight reduction, into a motor at a



MOON 65, A SIX-CYLINDER DEBUTANTE



PLAN VIEW OF NEW MOON FOR 1913

low reduction. Release of the starting pedal permits a spring to return these elements to their normal functions as generating units.

Mounted on top of the generator is an automatic circuit breaker, which serves to cut the generator into the battery circuit, upon its attaining sufficient speed to supply the battery, to cause the current to flow from the generator to the battery.

Two wires connect the cut-out to the battery, which is of six cells, with a voltage of 12 and a capacity of 50 ampere-hours. No cut-out is used to prevent overcharge, as the greatest output of the generator is low enough to render overcharge impossible, the maximum output being reached at medium speeds. At 18 miles per hour the generator delivers its full rating of 9 amperes, any increase of speed above this causing the output to decrease, so that constant driving at high speed will not generate sufficient current to damage the battery.

As a motor, the machine will crank the engine at approximately 70 revolutions per minute, producing a torque of about 150 foot-pounds per minute, sufficient to drive the car a short distance on high gear. The motor will continue to crank the engine as long as the starting pedal is depressed, the battery being of sufficient strength to turn it as long as ever may be required with an engine able to run at all.

The lamps are connected to the battery on a three-wire circuit, a positive and negative wire leading to two separate lamp circuits, each being connected to a neutral wire, which is in turn connected to the center terminals of the battery. This produces two six-volt circuits, with but a single series of wires. The lamps are connected in parallel and controlled by a suitable switch.

In general design the Moon motor consists of a four-cycle T-head engine, the inlet valves located on the right side and the exhaust on the left, being actuated by separate camshafts. The valves are of

large diameter, being 2 inches inside with a comparatively short lift. The valve tappets are of the roller type and are lubricated from the splash in the crankcase and are adjustable for wear. The new models are notable in that the valves are inclosed by aluminum covers to eliminate noise. The camshafts are driven by spiral gears. The cams and the shafts are cut integral and run on phosphor bronze bearings. The pistons are of gray iron fitted with four rings at the top and a number of oil grooves at the bottom. The pistons are unusually long and the wrist pins are set near the top, thereby permitting long connecting rods, decreasing the angularity of thrust and in conjunction with the long pistons lessening the wear on these parts. The crankshaft is of 1 3/4-inch diameter and is carried on three bearings of 1 1/4 inches total length of the four-cylinder models. The flywheel is bolted to an integral flange on the crankshaft. This element is cast with fan vanes.

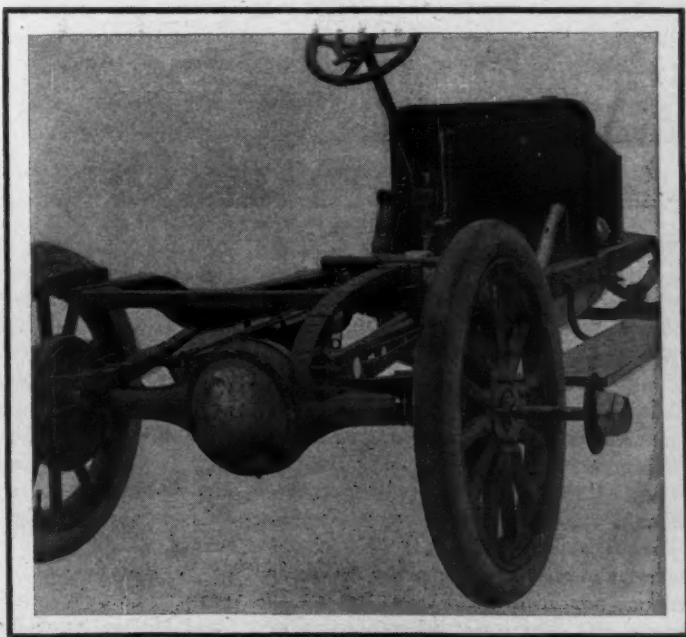
Water circulation is by a centrifugal pump in connection with a honeycomb radiator. Lubrication is by means of a constant-level circulating splash system, circulation being maintained by a rotary pump driven by spiral gears from the exhaust camshaft. This system has a capacity of 2 gallons.

A special Stromberg single-jet, water-jacketed carburetor, gravity fed, is used and the ignition is by dual system, using a battery independent of the light-

ing and starting system. The cylinders are cast in pairs and are bolted to a crankcase divided into upper and lower halves in the conventional manner. The motor is supported at four points from the main frame by cast arms, bolted to the top of the crankcase.

The clutch is of the multiple-disk-in-oil type, steel against steel, mounted on plain bearings with ball thrust, inclosed in the flywheel. The gearset is located amidships and is supported on four points by integral arms from two cross members of the frame. The shafts are supported on heavy annular ball bearings, a double row supporting the forward end of the main shaft. The case is of aluminum, the control quadrant being mounted directly upon it.

The drive is through a propeller shaft with two universal joints. The rear axle is of exclusive Moon design. The housing and axle tubes are of one piece and carry the annular roller wheel bearings. The



THREE-QUARTER REAR VIEW OF MOON 48 CHASSIS

# Koecklin Is a New Two-Cycle Engine

## Two-Stroke Motor With Sleeve Valves Designed for Racing

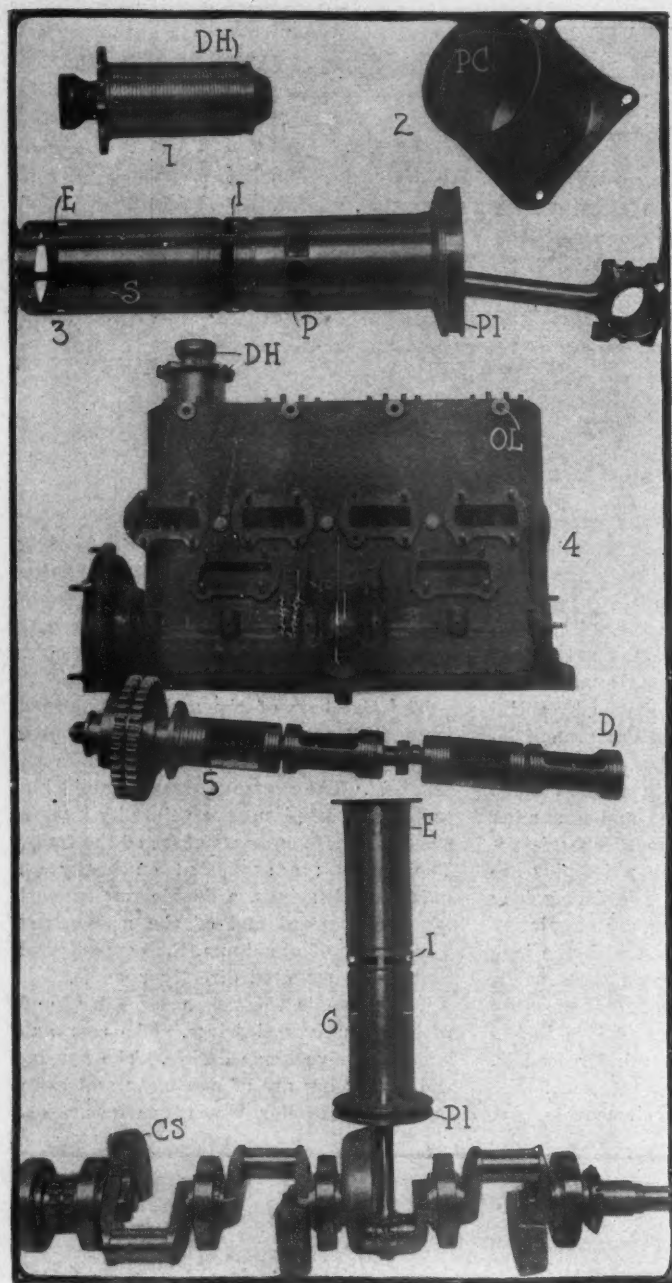


FIG. 1—DETAILS OF SLEEVE-VALVE TWO-CYCLE MOTOR

TO overcome the main objections brought against the two-cycle type of motor, namely the mixing of the fresh with the spent gases and the consequent inability to run correctly at a low number of revolutions, Alfred G. Koecklin, a European manufacturer, has produced a new type of two-cycle motor with sleeve valves. In this case the sleeve is not an independent organ but an extension of the piston. It is shown in Fig. 1, P being the complete piston and sleeve; S the sleeve forming a tubular extension of the piston; I the intake ports, and E the exhaust ports. The cylinder is of the superimposed type; the lower portion, P 1, having a greater diameter than the upper portion, and operating in the pump chamber PC, aspires and compresses the charge for an adjoining cylinder instead of its own cylinder.

This motor has been designed for racing purposes, its detailed construction differing in several respects from what would be adopted for a commercial article. It will be noticed that the gas pump chamber is not cast with the cylinders, but is a separate chamber secured between the cylinders and the crank-chamber and descending into this latter. The cylinders have a special type of detachable head, DH in Fig. 1, descending a considerable distance into the cylinder and secured to this latter by means of a series of bolts. This detachable head has an internal waterjacket and is bored out centrally to receive the spark plug.

As will be readily seen, this descending head forms an annular chamber within which the tubular sleeve operates, the sleeve thus being in contact, on the one hand, with the water-cooled cylinder walls, and on the other with the water-cooled cylinder head. Compression rings are fitted at the base of the head, at the base of the sleeve just above the intake ports and on the piston just below the head; there are also the usual rings on the compressor. In the illustration none of these rings is shown, but the single grooves will be observed, and it is in these that double spiral rings are fitted.

Near the end of the firing stroke the series of ports at the head of the sleeve register with the exhaust ports in the cylinder walls, and the lower ports uncover the intakes, allowing the compressed charge to rush in at the base of the sleeve and drive the spent gases out at the head. The ports being respectively at the base and the head of the cylinder, no baffle plate is required, it being claimed by the inventor that there is a complete scavenging of the cylinder and no loss of fresh gases. A further advantage of the system is that intake and exhaust take place on different planes and around the complete circumference of the cylinder, thus avoiding the warping effect sometimes met with

differential is of the double-gear type and runs on roller bearings, supplemented by ball thrust bearings. The axle shafts may be removed from the axle assembly by unscrewing six nuts on the wheel hubs and pulling out the hub caps and shafts which are integral. This operation, as shown in the accompanying illustration, permits the differential to be removed as a unit, by taking off the large plate at the rear of the axle housing.

Brakes on all models are 16 inches in diameter with  $2\frac{1}{4}$ -inch face. Oil drains prevent any grease from getting on the drums. All brakes are adjustable. They are equalized by cross trees and are of the internal expanding and external con-

tracting type, lined with Raybestos. The frame is of channel steel, extra heavy at the center, narrowed forward of the dash and heavily gusseted. There is a kick-up over the rear axle, the three-fourths scroll elliptic rear springs being secured thereto. The front springs are of the conventional half-elliptic type, perched over the axle.

The front axle is I-beam section made in one piece. The steering arm is carried above, and the tie rod behind it. The front wheels run on roller bearings.

Body types for 1913 include touring cars, roadsters, colonial coupes, limousines and berline limousines on all models, and special bodies for special purposes, such as light delivery, ambulances, etc.

## Manufacturers' Communications

### AS TO CARE OF TIRES

A KRON, O.—Editor Motor Age—A tire is one of, if not the most, important feature of a motor car. It is built for service. The service, as you may know, is not forthcoming if the tires are not treated with a reasonable amount of consideration. The men who get their money's worth and more out of their tires are those who detect an incipient trouble and remedy it at once.

# Brought Out by a European Designer

## Separate Pump Chamber Provided for Compressing Gases Before Ignition

in sleeves having intake and exhaust on the same horizontal plane.

A H-section rotary distributor allows of the passage of the gas from the compressor of one cylinder to the combustion chamber of the neighboring one. This distributor is shown at D, Fig. 2, where it is lying at the base of the block of four cylinders and just below the distributor chamber within which it works. This chamber, common to two cylinders, is completely waterjacketed to prevent condensation of gasoline on the walls. The distributor is driven by means of a silent type of chain from the crankshaft. It is in two distinct parts, coupled by means of dog teeth and has a pinion in the center driving the vertical spindle operating the oil pump.

In this illustration of the cylinders the detachable head of cylinder and connected up to the right-hand one. The intake are cut on the outer circumference of the tubular head, in order to facilitate the distribution of oil, the lubricant being brought up to holes O L receiving the oil leads; there is a similar oil delivery on the opposite side of each cylinder.

The crankshaft, C S in Fig. 3, is carried on five S. K. F. ball bearings, there being a bearing between each throw, one at the front and one at each side of the distributor pinion at the rear of the shaft. For the purpose of lubrication the shaft is bored throughout, the oil being drawn from the base chamber, through the hollow shaft to the connecting rod ends, and up the tubular connecting rods to the wrist pins. In addition to this there are, as already mentioned, a couple of oil deliveries to opposite sides of the head of the sleeve, and six leads to the rotary distributor.

On the forward end of the crankshaft is a bevel pinion driving a transverse shaft with a Bosch high-tension magneto at each end. Intake and exhaust taking place entirely around the cylinder, there are a pair of exhaust manifolds, to the left and right of the motor, the left-hand side one passing behind the rear cylinder and connected up to the right-hand one. The intake manifold is cast with the cylinders, the carbureter, a Vapor, being bolted up direct without the use of any piping.

So far as chassis features are concerned, the car is on standard lines. The clutch is of the cone type; the gearset provides four speeds and reverse, with the lever mounted directly on the box, and being operated by the left hand. The car is shaft-driven, with a universal at each end, has a floating type of live axle, and no differential. The frame, which has its greatest depth opposite the flywheel, is inswept at the front axle and outswept again at the extreme front. It is sharply upswept over the rear axle. The chassis has neither distance nor torsion rods to take up torsional stresses.

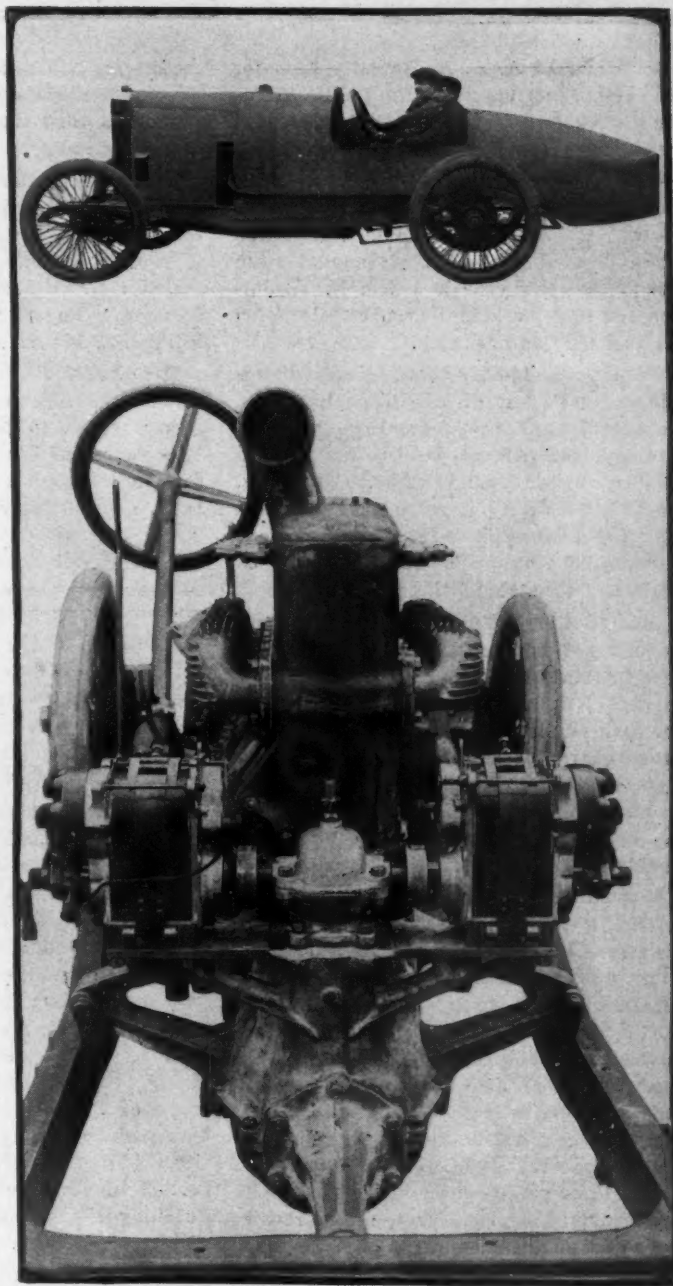


FIG. 2—NEW KOECKLIN TWO-CYCLE RACER



The greatest source of tire trouble is under-inflation. A motorist will run his car for miles on tires that are not properly inflated; due perhaps to the fact that they ride somewhat easier, and then wonder why his tires that were guaranteed to give service are out of running condition.

We are trying to educate the users to care for tires in a manner that will bring long life and reduce repair bills to a minimum. The one who would follow

these instructions should begin by supplying himself with a reliable air gauge; and then use it to keep his tires inflated at the prescribed pressure—20 pounds per inch of the cross section. For instance, if a tire is 4 inches, then the pressure of air should be 80 pounds.

Another thing the man who wants to save expenses should bear in mind is the fact that 5 per cent added to the weight of a car usually subtracts 15 per cent from the life of the tires. As long as the car owner can with smiling countenance pack eight or nine people in his seven-passenger machine, he must accept the consequences.

In order to get all the pleasure there is to be had from motoring and also to save

expenses in the long run, the owner should find out the weight of his car, weights certain sized tires are able to carry.

There are still other motorists who seem to have the greatest trouble with their treads wearing out. Undoubtedly they can be numbered among those men who, ignorant perhaps of the detriment it is to their tires, bring their car to a standstill so suddenly that it would really be a miracle if the tread didn't wear off long before its allotted time.

Be sure your brakes are properly adjusted; if not, they throw all strain of stopping on one tire, and this, as every one knows, spells ruin.—B. J. Cox, chief adjuster, Goodyear Tire and Rubber Co.



# From the Four Winds



**A**NOTHER A. A. A. Recruit—A motor club was organized in Delhi, N. Y., last week and was immediately affiliated with the New York State Automobile Association.

**State Meeting Called**—Officials of the New York State Automobile Association have decided to hold their annual state convention this year in Utica, N. Y., during the first week in December. Decision was reached on Saturday.

**Mexico to Build Roads**—Jesus Flores Magon, minister of the department of gubernacion of the federal government, has appointed Alberto Pani to the position of director of public works. Upon Mr. Pani will directly devolve the duties of carrying out the plans for the government for establishing an extensive system of highways throughout the republic.

**Mexico Adopts Good Idea**—The Mexican government has adopted the French system of keeping the public highways in repair. Road overseers will be appointed for each public road and each man will be given charge of about 1 mile of road to inspect and keep in repair. The first highway to which the system will be applied is the one running between the capital and Puebla.

**Motor Cars in Mexico**—"There are fifty or seventy-five motor cars in Tampico and vicinity," says the American consul there, "and most of these are second-hand cars purchased in the United States or in Mexico City. There are about twenty-five cars in that city being used as taxicabs. The demand is for small, cheap cars costing about \$1,200. Because of the sandy condition of the roads, the country is not adapted to the use of the motor car, although there are about 80 blocks of asphalt pavement in Tampico. There are no repair shops and no agencies in the city. A road between Tampico and La Barra is being considered."

**Cincinnati Grows Enthusiastic**—Cincinnati is soon to have a floral parade, which in point of beauty will compare with the brilliant, dazzling event in Los Angeles each year which is known as the fiesta or feast of flowers, if plans laid before a meeting of the Cincinnati Commercial Association by its president, George F. Dieterle, are adopted. The proposed plans grow out of the success of the sociability run of last Saturday in which the Cincinnati Commercial Association and the Commercial Tribune were the leading lights. So enthusiastic are the contestants who took part in the run on last Saturday and likewise the people who had the affair in charge, in which fifty-five different makes represented in 175 cars took part, that nothing short of a parade of decorated

motor cars will suffice to satisfy them. One of Mr. Dieterle's plans for the proposed parade is that there should be 500 cars in line.

**Baker Middleburg President**—James L. Baker was elected president of the Middleburg Automobile Club, recently organized in New York state. Other officers elected include: Vice-president, Dr. C. S. Best; secretary, Roger W. Cornell; treasurer, William J. Pindar.

**Car Runs a Press**—While scores of other industries were tied up by the lack of power, due to floods and high water in Wisconsin, the Wausau Record-Herald for 2 days recently was able to issue regularly, and it was by means of motor car power that the trick was turned. I. L. Seery, district agent for the Dahl Punctureless Tire Co. at Wausau, offered the use of his Chalmers 36 to J. L. Sturtevant, editor of the Record-Herald, and by belting the rear wheels to the printing press pulleys, more than enough power was generated to turn the perfecting press and run off the daily editions without any trouble whatsoever.

**New Way to Clean Streets**—With a regard for the comfort and safety of the city traffic of Los Angeles, the officers of the Automobile Club of Southern California have worked out a quicker and more efficient plan than the one now employed for cleaning the city street. The plan involves cleaning the streets by means of air tanks fastened to the street cars. The cleaning of the streets could then be quickly and effectually done during the hours of 2 and 4 a. m. Motorists who have had trouble and accidents caused by tire skidding while the streets were being flooded under the present system are watching the outcome of the safer plan with much interest.

**Chance in Great Britain**—According to a recent report from Consul Albert Halstead, Birmingham, Eng., there is a great field in Great Britain for the development of the American rubber tire industry, as it is claimed there is "more actual rubber in the American article than there is in the British or European product," rubber substitutes and fillers being extensively used in the foreign tires. Success, though it may be slow, will surely come to the American tire manufacturer in England and on the continent, if the tires are as good as they are said to be, says the consul, but, in order to bring about this successful financial condition, the American maker first must understand that it means the use of good material only and much money expended in the way of advertising, contesting in racing events, etc., and following to a certain extent the Brit-

ish policy with "such modifications as American sales ingenuity may deem desirable." This scheme, it is thought, will produce results.

**On a Long Trip**—After a trip of 10,863 miles, which took him practically around the United States, E. M. Pierce, of New York city, reached Indianapolis on September 25. Pierce is a lumber dealer and has his office in the Pathfinder in which he made the trip. Leaving the east he went to Chicago, then through Canada and down along the Pacific coast, returning by way of the southwest to the city of Indianapolis.

**Abolishing Toll Roads**—With the purchase of a toll road by the Floyd county, Indiana, commissioners, but one other toll road remains in that state. The road just purchased is 13½ miles long and has been operated as a toll road for 75 years. It runs from New Albany towards Paoli. Henceforth it will be a free road. The remaining toll road runs from New Albany to the Harrison County line. The road just bought was purchased for \$1,000 a mile, bonds being issued payable in from 1 to 5 years.

**Road Improvement in Michigan**—The movement for better highways is booming in Michigan at present. November 5 Marlette township, Sanilac county, will vote on a proposition to bond for good roads. Trout Lake township, Chippewa county, has voted to bond for \$10,000 for better highways. Mackinac county will vote November 5 on a proposition to bond for \$5,000 for the same purpose and in the counties where bonds have been issued and work of improving roads and building new ones is going on at a pace that surprises everyone.

**Too Many Signs**—The Motor Club of Harrisburg, Pa., will shortly take up the question of having certain signs along different highways eliminated. In the opinion of many there are too many signs in some sections. Once upon a time the trouble was there were not enough such signs. Now they say the multiplication and duplication is confusing, particularly so when there is a popular turn that has a whole forest of posts growing upon it. The touring motorist finds so many versions of the distances to be traveled and of the names of the towns nearby that he may be excused for being puzzled. In some cases signboards have too much on them. They attempt to tell too much about the countryside and the letters and numerals are cramped so they can be read only by a person who must come to a full stop and often must dismount to get close enough to see. Then again there are sign posts made of metal, which do not in every

case survive the weather and the stone-throwing as they should. Such sign posts are often signs of nothing, or else are barely decipherable.

**Can Put Up Colored Bands**—The New York state public service commission has declared that it has no objection to the placing of colored bands by the New York State Automobile Association on poles throughout the state of public service corporations so long as they will not interfere with the stencil marks of the poles which show ownership as required by order of the commission. The reply was in answer to Secretary Lyon's request for information for the state association.

**Example of Road Enthusiasm**—Three miles of highway leading into Clintonville, Wis., from the west, were built in 1 day by an organization of public-spirited citizens of all walks of life. Some furnished money, others contributed materials, while others threw off their coats and did the work. There were hauled to the road and spread 290 loads of gravel and crushed stone and the 3-mile stretch was turned from a sandhill into a splendid road between 7 o'clock a. m. and 7 o'clock p. m. by the enthusiastic citizens.

**New Empire State Road Opened**—The New York state highway commission last week opened for traffic of motorists the Buffalo-Batavia road through Williams-ville and Clarence, N. Y. For the past 6 weeks 2 miles of this highway east of the Transit road had been closed while brick was being laid. During that time motorists had to detour from the main road by way of Clarence Center. The highway department insisted that the road could not be opened until stretches of earth beside the 16 feet of brick roadway was finished but the urgency of Secretary Lewis of the Automobile Club of Buffalo undoubtedly had the right effect. Lewis claimed the highway commission was seeking retaliation for the stinging rebuke issued by the club a few weeks ago for its alleged negligence in good roads work in the Empire state.

**German Motor Car Insurance**—Daily Consular Reports recently devoted several pages to the subject of motor car and air craft insurance, saying in part that twelve insurance companies represented in Berlin write motor car insurance. Different forms of policies used cover the owner's liability for damage to persons or property, insurance of passengers, the motor car, tires, baggage and the chauffeur, also safe transportation of the car. German insurance policies are generally valid only in continental Europe. Premiums are based on the taxable horsepower. The maximum liability for damage to property is \$2,380; damage to one person, \$11,900; and the maximum limit of liability of all kinds for any one accident is \$35,700. New motor cars are insurable at a somewhat reduced rate, and club rates of premiums may be secured. In case of accident to a

car carrying more passengers than provided for in the policy, the liability for each passenger decreases in proportion as the number of passengers actually in the car is greater than the number provided for in the policy.

**Ontario's Motor Revenue**—Ontario's revenue last year from the sale of licenses for motor vehicles totaled \$50,831.25, twice the amount received during the year 1910, which was \$24,394. The revenue for 1906, the first year fees were imposed, was only \$15,235.15. The licenses issued last year totaled 11,339, and for 1910, 4,230, while in 1906, 1,176 licenses were issued. Fees collected for issuing charters to motor car corporations totaled \$235,663.10.

**Cannot Stop Garage Building**—Corporation Counsel Hammond, of Buffalo, N. Y., has sent a legal communication to Commissioner of Public Works Ward to the effect that persons desiring to erect garages are not required to secure consent of adjacent property owners prior to construction of the buildings for the accommodations of motor vehicles. The ruling was the result of the case of the Adams Express Co., which is planning to construct a garage in vicinity of Swan, South Cedar and Chicago streets and in which property owners complained. Judge Ham-

mond added that the ordinance states that property owners shall have opportunity to be heard on such cases before an aldermanic committee so that their views of the matter may be ascertained, but they cannot prevent erection of garages.

**Ask for Convict Labor**—Governor Hunt, of Arizona, has been petitioned by many of the tax-payers of Globe and the Gila river valley to have state penitentiary convicts build the 6 miles of uncompleted road between Stanley and Aravaipa on the edge of the Crook Nation forest in Graham county. It is stated that if this 6-mile stretch of road is built it will reduce the road mileage between the national forest district and the nearest railroad point 40 miles.

**New York's Car Holdings**—Fourteen motor cars are now owned by the New York state government, being divided in the various state departments as follows: State highway department, 8; state engineer's department, 3; department of public works, 2; state excise department, 1; the cost of each being between \$3,000 and \$6,000. When a state official secures a car he immediately receives with the governor's approval a chauffeur of his own choice who is placed in the non-competitive class in the civil service. These chauffeurs receive salaries ranging from \$100 to \$125 a month.

**To Concrete King Edward Road**—A portion of the King Edward highway is to be built of concrete, the contract for its construction having been let in the province of Quebec. The King Edward highway is the Canadian section of the International highway, connecting Montreal with several large cities of the United States. Ultimately it is expected that this road will continue as far south as Miami, Fla. It was the original intention that the entire highway should be built of macadam; but the minister who has under his jurisdiction the Canadian branch of the work has become interested in concrete roadways and has decided upon this important undertaking as a good place to try it out.

**Texas Wants Registrations**—An effort will be made in the Texas legislature, which convenes in January, to enact a law requiring the registration of all motor cars. Most of the towns and cities already have ordinances in effect providing for the registration and licensing of motor cars, but the new law will provide for a state registration. At this time there is no authentic means of knowing how many motor cars are in use in Texas. The number has been estimated all the way from 25,000 to 50,000. These estimates are based largely on the reports of dealers over the state. In San Antonio up to September 15 there had been issued a total of 2,398 licenses for motor cars. In Houston, Dallas and Fort Worth the number of cars in each of those cities exceeds the San Antonio registration, it is claimed.

### Wisconsin Garage Law

THE first uniform set of rules for garages has been issued by the state fire marshal's department of Wisconsin, and beginning October 1, all garages in Wisconsin will be required to observe closely the regulations made by state authority and given to the chiefs of the fire departments in the various cities and villages for execution. The list of rules is the result of a thorough investigation of garage conflagrations, and it is expected that the rules, if observed, will eliminate the most serious evils and menaces. The rules, thirteen in number, are as follows:

- 1.—None but fireproof buildings should be used as a garage; never any building, part of which is used for public meetings.
- 2.—The floors should be of cement.
- 3.—Heat with steam. Allow no flame, fire or fire heat, stove, boiler, furnace, forge or torch in the garage.
- 4.—Use electric, incandescent lights, protected by wire basket guard; never use lamps, candles, lanterns or other open lights.
- 5.—Store all gasolines in an approved underground tank, equipped with standard pump. Never keep gasoline in open vessels, or allow gasoline to run or drip on the floor or into drainage system.
- 6.—Use approved safety cans or approved portable tank in transferring gasoline to cars.
- 7.—Make sure that gasoline tank in the car is free from leaks and that the caps are secure.
- 8.—Provide standard metal waste cans on each floor, especially near the work bench, for oily waste. Destroy this waste each evening.
- 9.—Allow no shavings, refuse or waste to accumulate.
- 10.—For private fire protection, keep pails of sand with scoop and approved chemical fire extinguishers on each floor.
- 11.—Beware of carburetor flooding.
- 12.—Absolutely permit no smoking in the garage.
- 13.—Always be careful and vigilant. Large placards have been prepared at the cost of the state and given to all fire chiefs for distribution to garages. One copy of the placard has also been mailed to each garage, so that there may be no omissions.



# The Realm of The Commercial Car



## Time Wasted at Delivery Platforms

Examples Cited of Way Motor Trucks Are Handicapped

By William B. Stout

THE delay of motor trucks at congested delivery platforms is a serious proposition. It costs more to keep the trucks waiting than horse vehicles and yet is there any system or way in which a motor truck can be given preference without working hardship to the drivers of the horse vehicles waiting in line?

There was a world of truth in the remark recently made by the young Polish driver of a 3½-ton truck for the J. T. McMillan Packing Co., of St. Paul, Minn., when he was hindered at the freight depot platform. The firm had very strongly impressed upon his mind the necessity of keeping up the service at these points and eliminating every idle moment possible in the use of the vehicle. Arriving at the platform and finding a number of teams ahead of him the driver became nervous and rather free with his language in connection with delay which seemed to him entirely avoidable. "Aw, hold your horses," said the man ahead, to which the driver very quickly retorted, "We ain't got no horses; we're a motor truck. Hurry up!"

Few cities have adequate room and facilities in their railway freight yards for handling the traffic which passes through. In almost any city one can find lines of

### Army Officer Discusses Motor Truck Work

FORT MEADE, S. D.—Editor Motor Age—I have read with great interest the article on the New England maneuvers, published in Motor Age, issue of August 22, which gives an excellent account of the part played by trucks in these maneuvers. Your correspondent mentions one case where a 1½-ton truck was able to accompany the troops actually into their camp and he added that this was exceptional as everywhere else the motor trucks had to be unloaded at the entrance to camp or else could not be taken into the field for anything but a short distance.

This is just the point to be overcome in developing a motor truck for army use. We can use ordinary types of commercial trucks for hauling army supplies over good roads, but in campaigning we are not at liberty to select our line of communications with a view to having good roads, so it is necessary to develop a truck which will be able to negotiate any condition of territory which can be operated over by mules and wagons. From my experience with trucks, I believe this to be entirely feasible.

For comparison of trucks with mule-drawn wagons as a means of transportation in the field trains, it is necessary to consider a truck moving at the same rate of speed as a wagon, as each necessarily follows a column of troops and under the peculiar conditions it would be impossible for the truck to make two trips or more and it must be able to follow the troops anywhere so as to deliver rations wherever they camp for the night. Even under these conditions, the use of motor trucks will be economical.

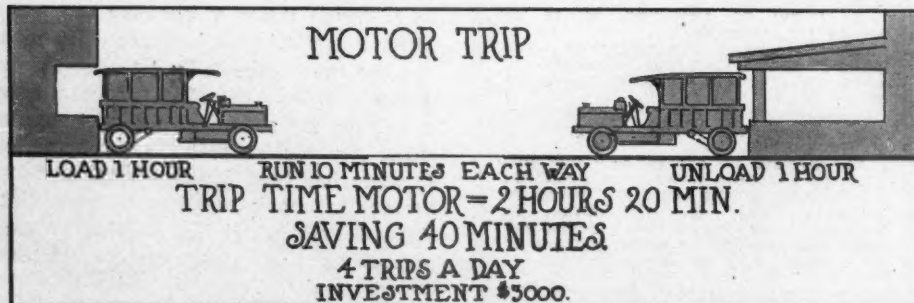
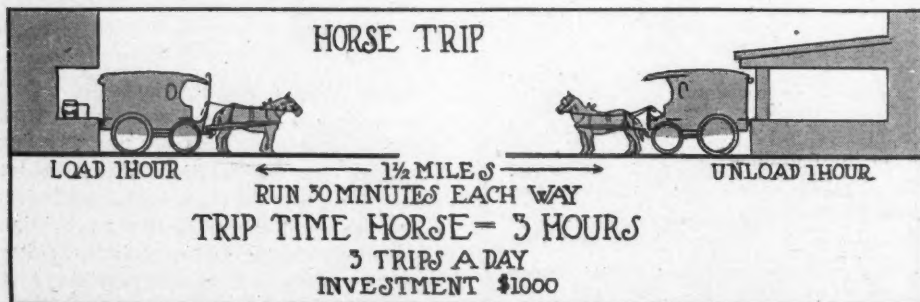
My views coincide with those of the writer as to tires. While I have found no type of pneumatic or filled tire which is sufficiently durable for rough work required of an army truck, still they are far from efficient—while they last—as they not only cause less vibration but give far better traction in mud, sand and on rough roads than do the solid tires, either smooth or with block tread.

I believe that the motor ambulance for army use should have the same chassis as the truck, the body being the only difference between the ambulance and the motor wagon.

My experience has been that the 1½-ton truck is the largest that can be depended upon under all conditions of roads. I tried out six 3-ton trucks of the best types made in the United States and they failed utterly on ordinary country roads in Wisconsin, where the 1½-ton trucks carried their loads with little difficulty.

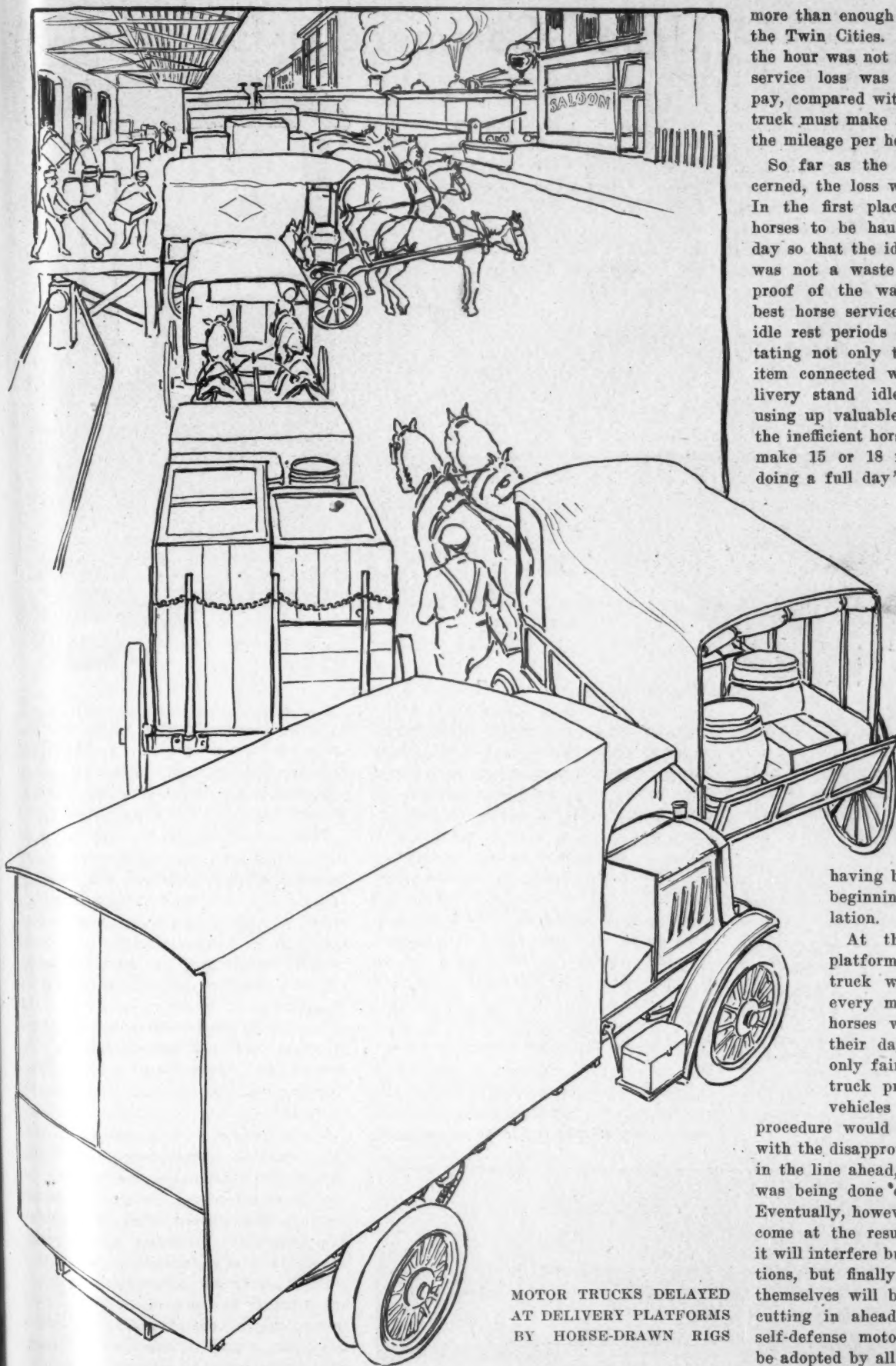
Under the head army mule equipment, the following is stated: "The capacity of the mule wagon is 5,000 pounds and it cannot stand much, if any, overload." This has not been my experience. Just a few days since, a wagon train left Fort Meade, S. D., with a cavalry command and I weighed the wagons as they pulled out. The loads varied from 3,400 pounds, the lightest, to 5,400 pounds, the heaviest, and the train proceeded through the Black hills of South Dakota, over dirt roads the first day, and then the loads were reduced to normal.

The summing up in the article is good. I think, however, that the average wagon will not have a capacity of more than 3,000 pounds.—Alexander E. Williams, captain, United States army.



from five to twenty vehicles lined up awaiting their turn at some platform where a great deal of time is being wasted and little effort being spent toward attaining real results. This very fact in most cities is the direct reason why motor trucks cannot be made to pay in services operating from railway yards, in cities where the haul from these yards is short, hindering the successful use of the truck entirely.

Chicago is peculiarly situated from a railway standpoint, and practically all of the central portion of the city can be reached by a wagon haul of not over a mile and a half. The average length of time which a vehicle is required to wait at a receiving or delivering platform in these yards is close to 1 hour. For short hauls a motor truck can only be made to pay through quick loading facilities and devices. Horses therefore can often do the work in Chicago serving these points at one-half the cost of motor truck



MOTOR TRUCKS DELAYED  
AT DELIVERY PLATFORMS  
BY HORSE-DRAWN RIGS

service, places allowing the use of motor trucks at all to these yards being exceptional ones involving a long haul.

At a Minneapolis out-freight platform recently eight horse vehicles were noted standing in line ahead of a motor truck

which was forced to await its turn with the rest. The truck was a 3-ton machine costing possibly \$12 per day to operate. To await its turn at this platform an hour's time at least would be lost, a loss of 15 miles of service under full load,

more than enough to make a trip between the Twin Cities. The mere cost loss for the hour was not more than \$1.25 but the service loss was much greater since to pay, compared with horse service, a motor truck must make from two to three times the mileage per hour of a horse vehicle.

So far as the horse vehicles are concerned, the loss was comparatively small. In the first place it is impossible for horses to be hauling every hour of the day so that the idle time at this platform was not a waste but a rest period. A proof of the wastefulness of the very best horse service is that there must be idle rest periods during the day, necessitating not only that the man but every item connected with the business of delivery stand idle waiting, loafing and using up valuable time at the demand of the inefficient horse. So long as the teams make 15 or 18 miles per day they are doing a full day's work and this mileage

can be accomplished in 3 to 4 hours of actual road work. Since the horses must stand still the rest of the time they might just as well be idle at the delivery platform as in the barn or any other place.

With the motor truck, however, no rest periods are demanded. Every minute of road running lost is lost service. All of these statements are axiomatic,

having been recognized from the beginning of motor truck installation.

At this Minneapolis freight platform therefore the motor truck was suffering a loss for every minute of idle time; the horses were resting—a part of their day's work. It would be only fair then to give the motor truck preference over all horse vehicles in unloading. Such a procedure would at once, however, meet with the disapproval of every other driver in the line ahead, who would feel that he was being done out of his rightful turn. Eventually, however, such a condition will come at the result of demand. At first it will interfere but little with horse operations, but finally as a result the horses themselves will be so hindered by trucks cutting in ahead of them that in very self-defense motor vehicles will have to be adopted by all firms delivering to these points to get to the delivery platform at all.

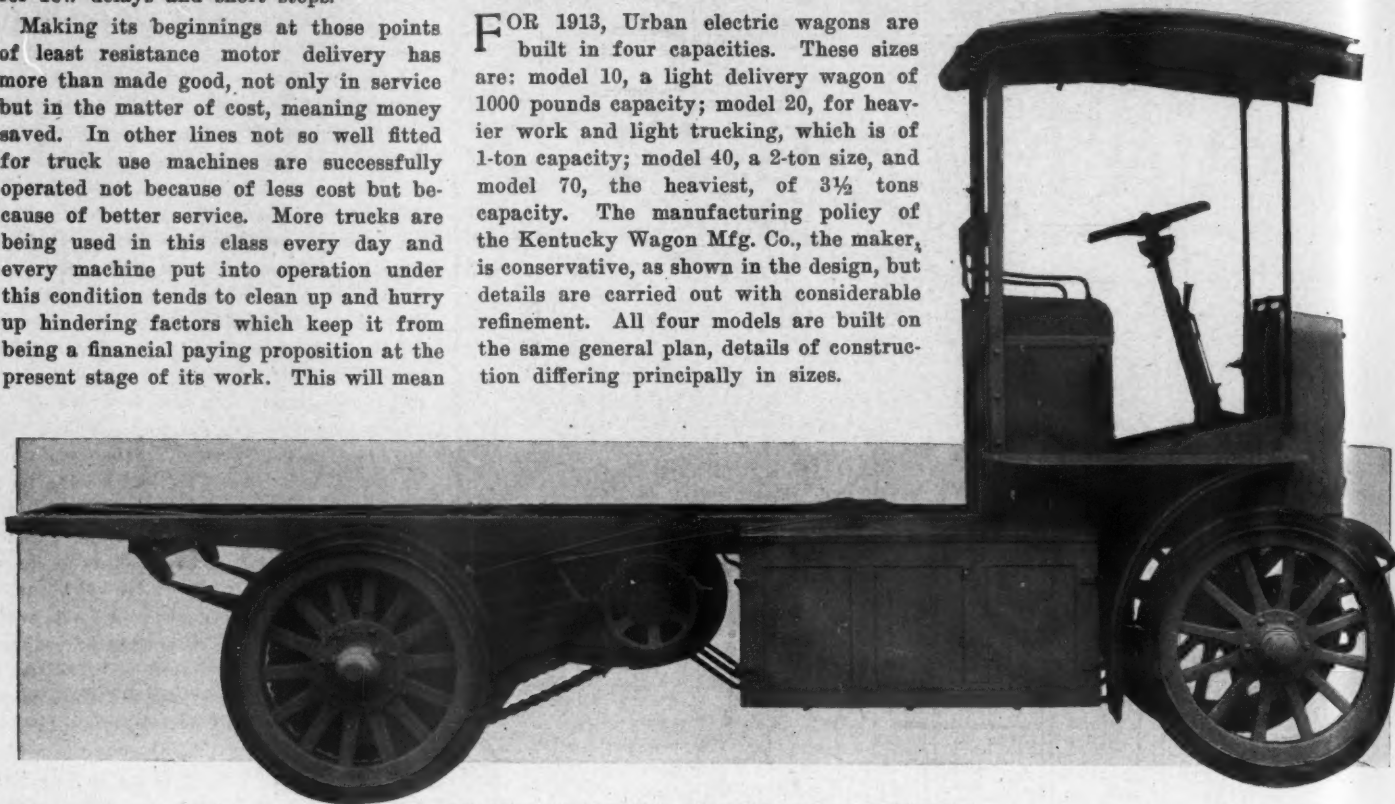
When this time comes there will come with it an entire reorganization of the methods of handling goods at in and out freight stations. The half-hearted methods which were plenty fast enough for horse

delivery will give place to fast systematized handling of goods which will make for few delays and short stops.

Making its beginnings at those points of least resistance motor delivery has more than made good, not only in service but in the matter of cost, meaning money saved. In other lines not so well fitted for truck use machines are successfully operated not because of less cost but because of better service. More trucks are being used in this class every day and every machine put into operation under this condition tends to clean up and hurry up hindering factors which keep it from being a financial paying proposition at the present stage of its work. This will mean

## Urban Commercial Electric Car

FOR 1913, Urban electric wagons are built in four capacities. These sizes are: model 10, a light delivery wagon of 1000 pounds capacity; model 20, for heavier work and light trucking, which is of 1-ton capacity; model 40, a 2-ton size, and model 70, the heaviest, of  $3\frac{1}{2}$  tons capacity. The manufacturing policy of the Kentucky Wagon Mfg. Co., the maker, is conservative, as shown in the design, but details are carried out with considerable refinement. All four models are built on the same general plan, details of construction differing principally in sizes.



CHASSIS OF 1913 URBAN COMMERCIAL ELECTRIC

that very soon these trucks will be paying financially as well as in service and will have better delivery conditions to a degree that will allow other lines of work to take up the motor from the service standpoint which could not do so now with any degree of success.

Thus will gradually come an era of reorganization in all freight handling matters as related to the delivery of goods over the road, and just as surely as the motor car has driven the horse off of the boulevard so will the motor truck eliminate all draft animals from our business streets.

The inefficiency of the horse has long been known; the efficiency of the truck has now been proved beyond question. Those who do not know this are becoming posted.

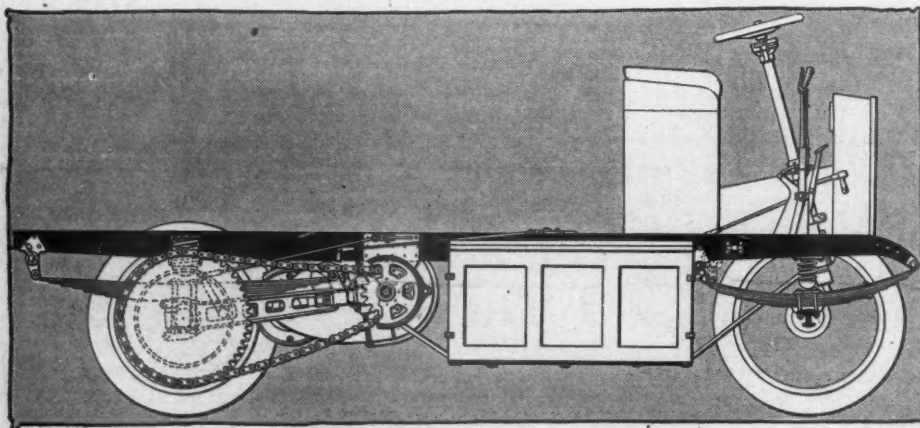
Urban trucks are double chain-driven, with underhung batteries, the driver being seated at the forward end of the chassis. The motors are suspended beneath the main frame, behind the battery compartment, and drive to a countershaft. Batteries are of 165 ampere-hour capacity on the 1,000-pound size, 165 on the 1-ton model, 195 on the 2-ton, and 252 on the  $3\frac{1}{2}$ -ton truck. The wheelbases and tire sizes on the different types are, respectively, 36 by  $2\frac{1}{2}$  front by 36 by 3 rear on the model 10; 36 by  $3\frac{1}{2}$  front by 36 by 4 rear on the model 20; 36 by 4 by 36 by 3 dual rear on the model 40, and 36 by 5 front by 36 by 4 dual rear tires on the model 70.

The small car carries thirty cells, while the others have forty-four each. They are geared respectively for 12 miles per hour,

10 miles per hour, 9 miles per hour, and 8 miles per hour with full load. The wheelbases are 86 inches, 100 inches, 118 inches, and 130 inches respectively on the four models.

The cars are built on frames of pressed channel steel, in depths of from 3 to 7 inches, a sub-frame, by which the battery and motor are supported, being suspended from the frame by an ingenious system of trussing. Each frame has five cross members, three of which are attached to the side members by integral gusset plates, the other being without gusset plates, and serving to support the sub-frame from the main frame. Frame dimensions, rivet spacing, etc., follow closely the recommendations of the S. A. E. standards committee.

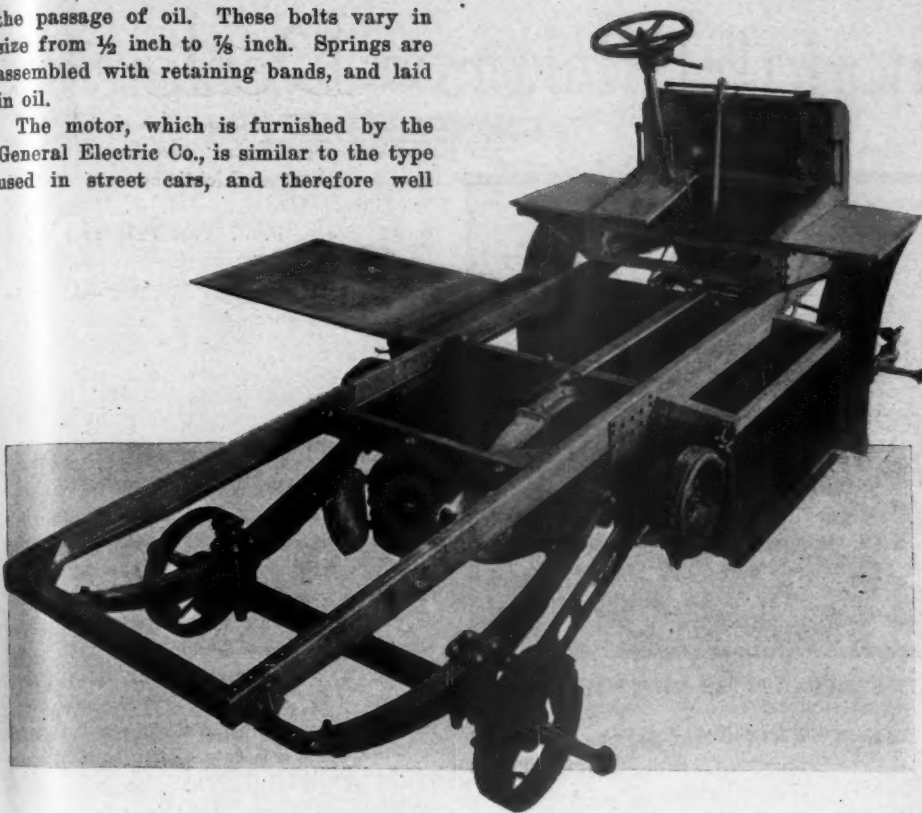
The axles are of I-beam section in front in all models, I-beam rear on model 10, and of square section in the rear axles of the heavier models. They are all steel forgings, the spindles being of large size and mounted with Timken roller bearings. Wheels are of the artillery type, with plain solid rubber tires. Urban springs are mounted on the axles by special heat-treated nickel bolts of large diameter, which are secured to the springs by rigid steel plates mounted over the spring centers. Springs are half-elliptic all around, 56 inches long by  $3\frac{1}{2}$  inches wide in the rear on the heavier models. All spring eyes are bronze-bushed, and spring shackle bolts are hardened and ground, being lubricated by integral grease cups, with holes drilled through them to facilitate



SIDE VIEW OF URBAN ELECTRIC CHASSIS

the passage of oil. These bolts vary in size from  $\frac{1}{2}$  inch to  $\frac{3}{8}$  inch. Springs are assembled with retaining bands, and laid in oil.

The motor, which is furnished by the General Electric Co., is similar to the type used in street cars, and therefore well



THREE-QUARTER VIEW OF URBAN TRUCK CHASSIS, SHOWING SLIDING BATTERY BOX AND PROTECTED DASH FITTINGS

adapted to commercial vehicle service, the rigors of whose demands for overload and flexibility may well be compared to the strenuous service for which this type was designed. It is designed, too, with special regard to efficiency in storage battery service. The motors for the different models are made in capacities of from 60 volts, 20 amperes, to 85 volts, 40 amperes.

Drive from the motor is to a countershaft by means of a silent chain, the driven sprocket being mounted on the flange of the differential gear, and the whole assembly inclosed in an oil-tight aluminum case, and running in a bath of oil. The differential is of  $3\frac{1}{2}$  per cent nickel steel, heat-treated, the gears mounted on ground bearings, provided with oil passages.

The countershaft is mounted on four annular ball bearings, and drives to the rear wheels by adjustable roller chains. The rear sprockets are mounted on the brake drums, which in turn are bolted to the spokes of the wheels. Propulsion is through radius rods, which are so pivoted as to allow universal movement of the axle, without undue stress on the frame.

Options on the battery are offered for either lead or nickel-iron types, the former type being offered in either standard, medium, thin, or ironclad plate construction. The battery is suspended from the sub-frame, just before the countershaft, where it is well protected, and accessible from either side and from the top, the cells being disposed in trays that may be withdrawn from either side.

The controller is mounted in the short dash shroud, together with ampere-hour meters, lighting and emergency switches, and all wiring terminals. This compartment is accessible by the removal of a rear panel of aluminum. The switches are mounted on the wood casement of the panel, and are accessible from the driver's seat. The emergency switch is fitted with a key which can only be removed when it is in off position. The controller is operated by means of a lever just beneath the steering wheel. This lever is disposed within a double slot segment, the lower slot being for the four forward speeds, and the upper for the two reverse speeds, a thumb latch between preventing accidental passage from one slot to the other. This controller handle revolves the outer tube of the steering column, which is linked to the controller by a drag-link mechanism.

Service brakes, which are of the contracting type operate on drums on the counter shaft, and are actuated by a pedal; emergency brakes, being in the rear wheels, and of the expanding type, and are controlled by a side lever. Steering is by a worm and nut steering gear.

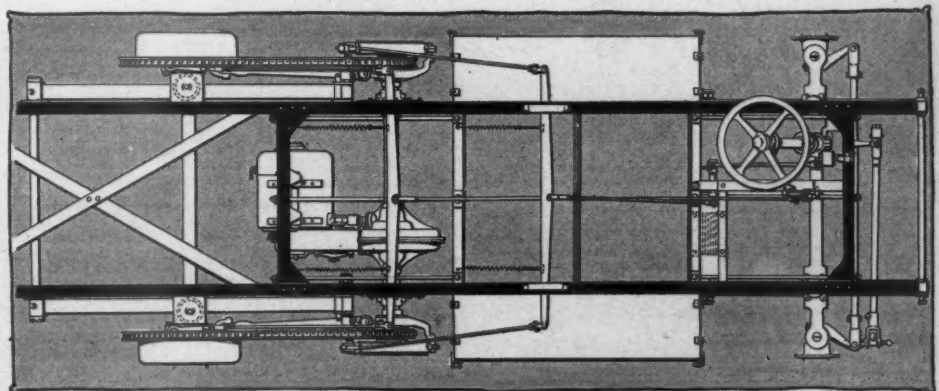
Owing to the position of all essential parts below the main frame, the body space behind the driver's seat is clear, adapting the chassis to any style of special body, and making loading and unloading easy.

#### MICHIGAN MILITIA TRY TRUCKS

At the recent maneuvers of the Michigan National Guard at Ludington, Mich., motor trucks were very much in evidence for the first few days. There were few of them which held up under the gruelling 10-day test and showed beyond argument that the gasoline car really is to be reckoned with when it comes to army field transportation.

The pack wireless set which heretofore has been transported on pack mules, was carried through this year's maneuvers in Michigan on a truck built by the Alden Sampson Mfg. Co., of Detroit. It was rated to carry a load of 1,500 pounds and in the campaign it carried six men averaging 150 pounds and the complete wireless equipment which is a rated load for four pack mules. Ten riding animals and the four pack mules were displaced. At best the mobility of such a unit does not average over 20 miles per day, while the same distance is 1 hour's comfortable work for the section transported on the truck.

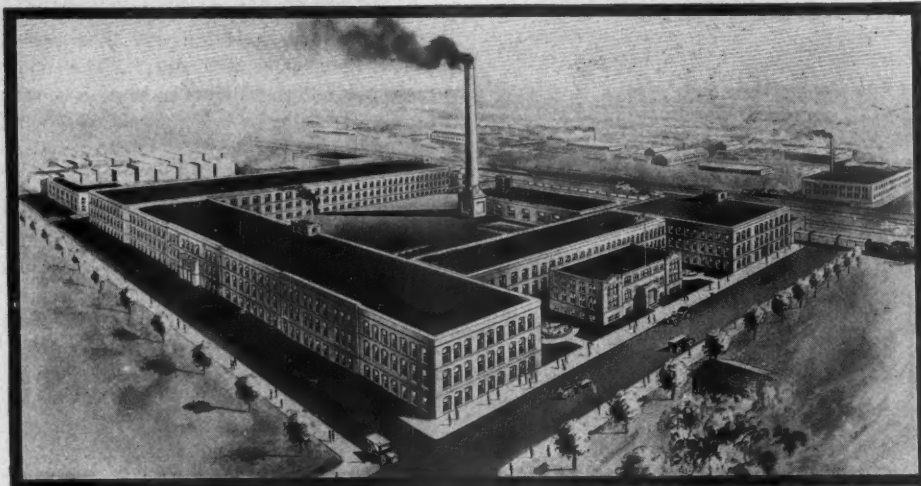
The machine was ready for instant use during the entire 10 days and was operated over all sorts of roads. To complete the test and give the officers assurance that the truck would handle itself and its load over all roads, it was packed with the entire wireless equipment and camp equipment for the use of the six men who rode in addition to extra personal equipment for the comforts of the men. The truck was driven across country from Ludington loaded far beyond its capacity, care being taken to put the route over the worst available roads in that general direction. The trip was made without any forced stops whatever and with no motor or car trouble whatever, it is reported.



PLAN VIEW OF URBAN ELECTRIC CHASSIS



# Among the Makers and Dealers



NEW BRANCH PLANT OF KISSEL MOTOR CAR CO. IN MILWAUKEE

**CHANGE of Name**—The Henry Lee Power Co., Chicago, has changed its name to Old Reliable Motor Trucks Co.

**Moon Business Increased**—The Moon Motor Car Co., of St. Louis, announces it increased its business this year 217.1 per cent.

**Premier Plant Expanding**—The Premier Motor Mfg. Co., Indianapolis, is about to let contracts for two large additions to its plant. These will be two-story brick structures, one 40 by 148 feet and the other 40 by 140 feet.

**Amplex Making Big Plans**—If plans now being formed by W. J. Mead, president of the Amplex Motor Car Co., of Mishawaka, Ind., which is the reorganized Simplex Motor Car Co., are carried out the plant will be enlarged to double its present size and all parts of the car will then be made at the Mishawaka factory, including the aluminum bodies. The company will in a short time put on a larger force of workmen.

**Electric Car Show for New York**—The sixth annual New York electrical exposition and motor car show will be held at the Grand Central palace October 9-19. Three floors will be used for the exhibition which promises to be the largest and most complete of its kind ever held. Trucks will be the feature of one section of the show and pleasure cars of nearly a score of types will be exhibited in another. On the third floor a track 1/10 of a mile around will be installed for demonstrating purposes and for the instruction of customers. The electric vehicle companies that have contracted for space so far include the following: General Vehicle Co., General Motors Truck Co., Buffalo Electric Vehicle Co., Anderson Electric Car Co., Lansden Co., Studebaker Corporation, Atlantic Vehicle Co., Baker Motor Vehicle Co., S. R. Bailey Co., Champion Electric

Vehicle Co., Cleveland-Galion Co., Ward Motor Vehicle Co., Edison Battery Co., Electric Storage Battery Co., Philadelphia Storage Battery Co., and the Gould Storage Battery Co.

**Medal for Kissel Truck**—The Kisselkar truck has again won the first prize at the California state fair, and acquired the gold medal that symbolizes the honor. This is the second year that this honor was given to the Kissel Motor Car Co.

**Studebaker Staff Meets**—About thirty branch managers and officers of the Studebaker Corporation met at a dinner at the Pontchartrain hotel, Detroit, on September 26, the occasion being the annual meeting for the discussion of the coming season's campaign. The Studebaker plant in South Bend, as well as that in Detroit was inspected.

**McDonald to Be a Professor**—If a sufficiently large appropriation can be gotten from the state legislature, the University of Missouri will establish this year a department of instruction in motor car engineering. Stewart McDonald, vice-president and general manager of the Moon Motor Car Co., is to be the professor in charge of this department.

**Another Self-Starter**—The Merralls Starter Co. has been organized in Detroit with a capital stock of \$150,000, to manufacture a compressed air type of starting apparatus, which is the patented invention of W. A. Merralls. It has not been definitely decided as yet whether the concern will locate in Detroit or in the east, but in all probability Detroit will be chosen. It is proposed by the new concern to erect a two-story factory to take care of an output of about ten starters a day. Plans for such a structure have been made and they call for a building measuring 60 by 160 feet. The starter utilizes part of the explosion pressure of each explosion to

compress the gas which is stored in a tank. The incorporators are W. A. Merralls, R. S. C. Neely, F. J. Van Pelt and H. B. Lowland.

**Illinois Dealers Call Meeting**—After being inactive through the summer months, the Automobile Dealers' Association of Illinois, will be revived this month and will hold its annual meeting at the state fair grounds in Springfield on October 8. Officers will be elected for the ensuing year and other business transacted.

**U. S. Tire Co.'s Production Plans**—All of the United States Tire Co.'s factories will be operated during the coming winter on full summer schedule. This means that they will be run night and day, three shifts of workmen being employed. Last winter was the first time in the history of the tire industry that it was considered necessary to maintain a full summer working schedule throughout the so-called off season. The plan worked so satisfactorily that its continuation was decided upon. The four factories produced more than 1,250,000 tires during the year and their 1913 output will be far in excess of this number, the equipment of all of the factories having been increased, and a new plant being in contemplation.

**Changes in Boston**—The coming of October has seen a number of moves on the motor checkerboard in Boston that has changed the aspect of the local colony somewhat. The moving of the Oldsmobile company from Massachusetts avenue to Commonwealth avenue in the Back Bay allowed the Buick branch to move from the Motor Mart to the Oldsmobile's former quarters. Into the old Buick quarters moved the Tyler Brothers' Corporation with the Little, Chevrolet and Columbus electric. Then the Rambler got out of its salesrooms next door to the Oldsmobile, moving to its new home in the Back Bay and J. W. Bowman & Co., agents for the Stevens-Duryea and Waverley electric, quickly moved into the Rambler's old place on Massachusetts avenue. This left a vacancy on Boylston street where Bowman had his salesrooms and into this has moved the R. C. H. branch from Copley square. So there was a vacancy in Copley square and this was quickly taken by the Roberts & Sherburne Co., agent for the American. The Oakland has moved up to 823 Boylston street and the vacancy caused by this has been gobbled up by the new agency for the Pope-Hartford. The retirement of the S. F. Wise Co., that had quarters on Boylston street allowed the Franklin agency to move back again to that street, going into the Wise salesrooms. In all the years that the motor colony has been established in Boston there has not been so many moves made within

such a short period, the various changes having been brought about within a couple of weeks and most of them within a week.

**To Make Rotary-Valve Motor**—The Parker Motor Co., of Detroit, has been formed to promote the sale of a rotary-valve motor which is the invention of Victor C. Parker, formerly of Winnipeg, Canada.

**To Get Cars Off Streets**—A building designed exclusively for the parking of motor cars, now left standing on the downtown street of Toledo, to the detriment both of the cars and the public, will be erected at 324-326 Huron street by H. W. Wachter. The building will be fireproof, two stories in height, 60 by 40 feet. The approach will be through an alley in the rear of Nicholas building. At present Huron street between Madison and Adams streets is lined with cars all day so that traffic becomes difficult.

**Kissel's New Branch Plant**—The Kissel Motor Car Co., of Hartford, Wis., has acquired the former Romadka trunk works on Center street, between Thirty-first and Thirty-second street, Milwaukee, Wis., and is now converting the plant into a motor car factory which will serve as a branch of the big Kisselkar works in Hartford. The Romadka Brothers Co., up to the time of its failure last spring, owned and operated one of the largest trunk and bag manufactories in the United States, having more than 200,000 square feet of floor space at its disposal. All of this space will be used by the Kissel people. It is proposed to use the Milwaukee branch for the production of two complete models of the Kisselkar. The Hartford works have been badly crowded for more than 2 years, despite the constant addition of new buildings, and the production has continually been hampered by this condition. Now, in addition to the big works, the company has an opportunity to acquire possession of a large factory structure in Milwaukee, which has unusual facilities for manufacturing, and it was quick to take advantage of this chance to establish the much-needed additional factory, which is only 37 miles from the main works. The location of a branch in Milwaukee does not mean that

the Kissel people intend to abandon the Hartford works eventually, as the present main works cover many acres of ground and are among the largest of the kind in the west.

**Tiffin to Make Trucks**—It is announced that the Tiffin Wagon Works, at Tiffin, O., is preparing to enter the motor truck field and expects to place a line of these vehicles on the market next spring. Agencies already are being established and arrangements for placing the new machines on the market perfected.

**Will Make Motors**—Work started Monday on the construction of the Julian Motor Co.'s new factory at Messina Springs, N. Y. Fifteen acres have been acquired as a building site and it is expected that the factory will be in operation by February 1, 1913. The company is comprised of Syracuse men and it will put out motors for cars, boats and stationary engines. The officers: Julian Brown, president; John F. Bartels, vice-president; G. Aberdeen Young, treasurer; Ernest W. Lawton, secretary.

**Municipal Garage Planned**—Officials of Indianapolis have in mind establishing a municipal garage beginning January 1, in which all of the motor cars used by the city will be taken care of. It is thought considerable money can be saved by buying oil, gasoline and other supplies in large quantities under contract and by having repairs made by a city mechanic. At present each city department looks after the cars it has in use, buying supplies for them in small quantities. Repairs are made at various public garages.

**To Sell Selden Truck Output**—The Selden Truck Sales Co., of Rochester, N. Y., has just been incorporated with a capital of \$150,000 to handle the entire truck product of the Selden Motor Vehicle Co. The incorporators are George C. Gordon, W. C. Barry, Jr., R. H. Salmons, Henry G. Strong and Charles H. Stearns, all of Rochester, N. Y., the first three named being officers of Selden Motor Vehicle Co. The object of this selling organization is to sell motor trucks direct from the factory to the user upon terms of easy payments. The Selden Motor Vehicle Co. will

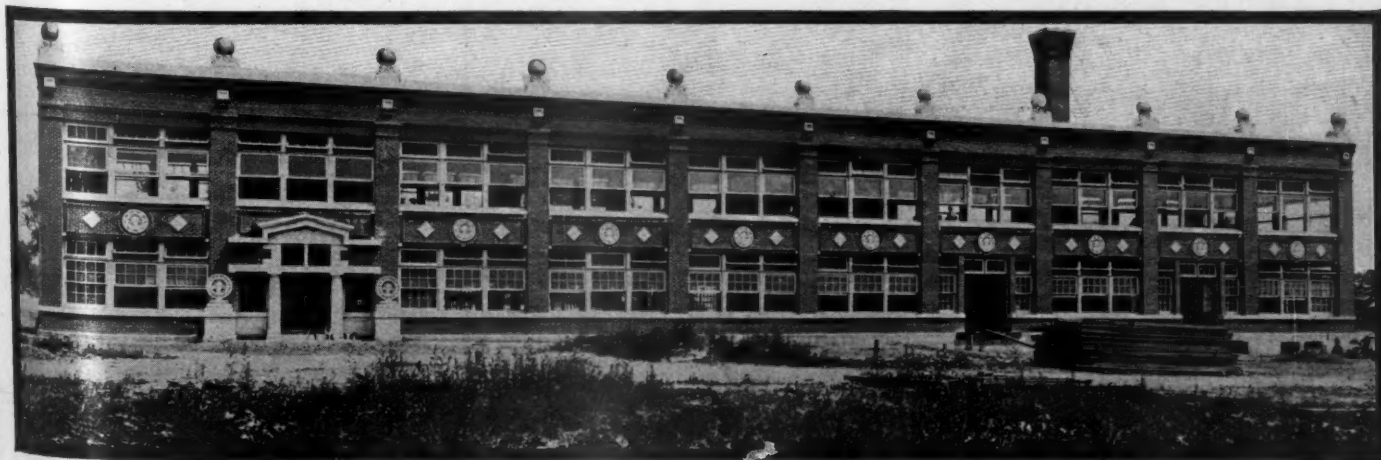
continue its pleasure car business under the same management as heretofore, offering a medium-priced touring car either direct or through dealers.

**May Move to Detroit**—There is some talk of moving the entire plant of the Lewis Spring and Axle Co. to Detroit from Jackson, Mich., according to a statement made by President Lewis. The bulk of the concern's business comes from Detroit and the location there would be more convenient.

**Increases Engine Plant Capacity**—The Milwaukee Motor Co., Thirty-second and Burleigh streets, Milwaukee, Wis., has completed additions and improvements which will increase its capacity by one-third. The company manufactures motors for pleasure cars and commercial vehicles, furnishing the power plants for all Imperial cars, made at Jackson, Mich. More than \$70,000 worth of new machinery and equipment has been installed during the summer months.

**Queer Legal Battle**—The battle among three concerns with similar corporate titles for the right to open mail is still being carried on at Racine, Wis., by the J. I. Case Threshing Machine Co., J. I. Case Flow Works and J. I. Case Co. The post-office department has given the right of priority in opening mail addressed to Case companies to the J. I. Case Threshing Machine Co., the oldest of the three, but application has now been made by the other two companies that a referee be appointed by the courts to open and distribute all mail matter.

**New Hess-Bright Factory**—The new factory and office of the Hess-Bright Mfg. Co. at Front street and Erie avenue, Philadelphia, Pa., has a frontage of 200 feet and a depth of 235 feet. The entire second floor to a depth of 35 feet is devoted to offices. Back of the offices the building is one story high with sawtooth roof. As the bulk of the company's business is importing, the shops will be used at present only for repair work and for manufacturing the new double row bearings. The present building forms the nucleus of a much larger plant which it is intended eventually to erect.



NEW FACTORY AND OFFICE OF HESS-BRIGHT MFG. CO. IN PHILADELPHIA

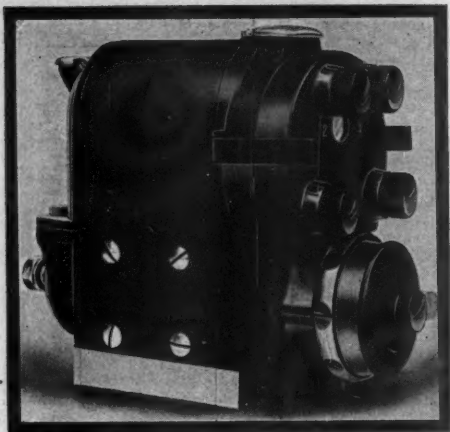


FIG. 1—DISTRIBUTOR END OF BOSCH ZR 4 MAGNETO

#### Simple Turntable

A NEW turntable of unusual simplicity, which is of the pitless type, yet quite low, is manufactured by George P. Nicols & Brother, Chicago. It is designed to be installed on top of the garage floor, the platform being 5 inches above the floor, access to it being obtained by the use of a cast iron bridge which is inclined upward. The turntable is built on a steel frame and turns on a ball bearing at its center, and is said to turn so freely that a child easily can move the heaviest car. Incidental advantages set forth by the manufacturers are that with such a turntable a narrower and less expensive driveway may be used than where it is necessary to back out of the garage, and that a car standing on it may be turned to any angle in reference to the light for washing and repairs. These conveniences in addition, of course, to the urgent advantage of immunity from the dangerous practice of backing out of a garage, especially at night, are urged.

#### Folding Lavatory for Motor Cars

An innovation in luxury is introduced by A. B. Sands & Sons, New York, in the form of a complete lavatory equipment for limousines and touring cars, which

# Development Briefs

## New Pitless Garage Turntable of Compact Design—Folding Lavatory for Motor Cars Is Latest—Bosch Brings Out Waterproof High-Tension Magneto—Single-Jet Burner for Acetylene Motor Car Lamps

when folded out of the way consumes little space, but when opened provides a wash basin, with running water, a compartment for comb and brush, etc., and a shelf for towels. A lid over the upper portion opens up to expose a mirror on its inner side. The supply is taken from a tank on the roof of the car, or under the body of the car, and piped to the lavatory, where a swiveled, self-closing faucet conducts it to the bowl. The complete outfit weighs but 18 pounds. When closed, the case is 22 $\frac{1}{4}$  inches high, 13 $\frac{1}{4}$  inches wide, and 4 $\frac{1}{2}$  inches deep. When open, the bowl projects 15 $\frac{1}{4}$  inches, and the mirror raises the total height to 30 inches.

#### Waterproof Magneto

The latest addition to the Bosch magnet family, Figs. 1 and 2, is a development of type DR, differing in the type and number of magnetos used, and in the fact that the new magneto was especially designed to be waterproof. The magnets in the new instrument are two in number, and of an especial comb design at their ends, or pole-shoes, which makes them more effective, it is claimed, than the three double magnets used on the parent model. It is said that this magneto generates at lower cranking speeds than former types, and that as large a spark is produced at low speeds in the retarded position as in full advance. The claim is made that this permits the engine to be started on the magneto spark alone, at no more than ordinary cranking speed.

The new machine is made dust, oil and waterproof by means of a protecting

hood, which is fitted over the shaft end of the magneto, inclosing the slip ring connection and the safety-spark gap, and fitting closely against the magnets. This joint is packed, as is the space between the magnets, and the distributor plate at the opposite end. Instead of the carbon brush in the base of the instrument formerly used to insure a ground from the engine to the grounded portion of the armature windings, the new magneto has two of these brushes, located in hollow screws in the end plate of the circuit breaker assembly. The bearings of the

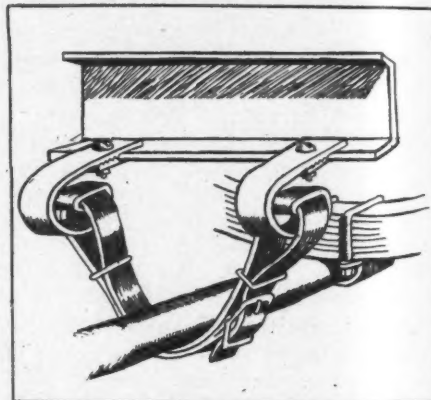


FIG. 3—PACIFIC DOUBLE RECOIL CHECK

new magneto have been somewhat amplified, and the cover plates of the oil ducts have been provided with rounded overhanging edges, to facilitate the draining off of water. This magneto is adapted for use in a dual system, and a double-spark magneto is also made in this type.

#### Roni Acetylene Burner

A new type of gas burner for use in motor car lamps has been introduced by William M. Crane Co., New York. This burner differs greatly from the ordinary tip in that it has but one jet, the orifice of which is twice the size of the usual hole in the double opposed jet. The lava tip is usually made in the form of a Y, two small holes projecting the gas to the center of the crotch, the gas spreading out in the form of a fan, when brought into collision. For an equal volume of gas, it follows that the holes, when two in number, must be of necessity of small diameter, when compared with the size that would be required if but one hole were used. Small holes are naturally more inclined to clog than large ones, and must be cleaned with delicate needles.

Bray's Roni burner, on the other hand, has but one opening, elongated in form

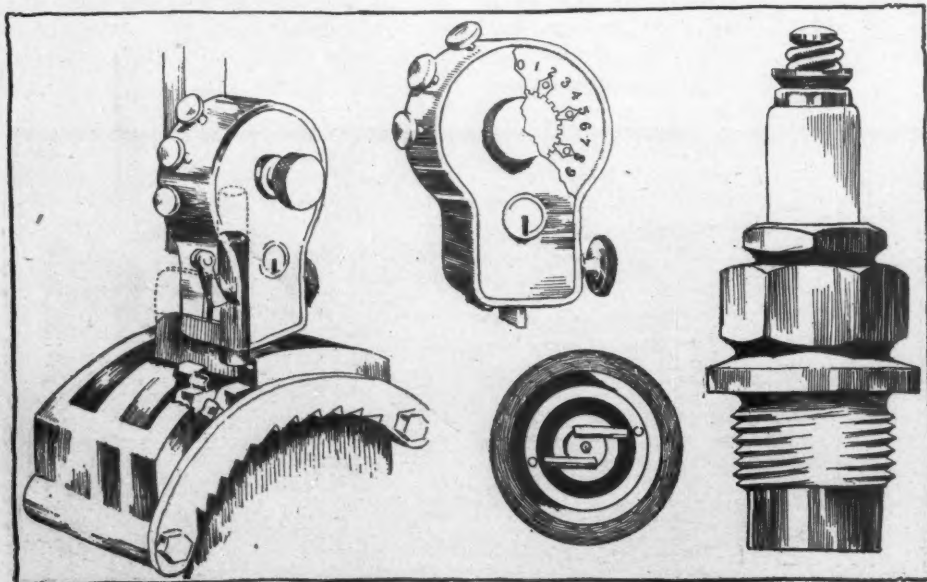


FIG. 2—BLACK EAGLE SPARK PLUG AND TROY MOTOR CAR LOCK

# Novelties for Motoring

**Leather Rebound Straps from California—Combination Lock for Gearshift Lever—Spark Plug Has Pitless Electrodes and Simple Spring Terminal—Valuable Device for the Use of Tire Repairmen**

instead of round, projecting, because of its shape, a flat and elongated flame. The faults of warping, and consequent disalignment of the lava tip, of clogging of one tip, and the destructive overbalance of the flame as a result, and the frequent cracking of the reflector when the rear hole becomes closed and the forward jet projects a single pencil of flame against

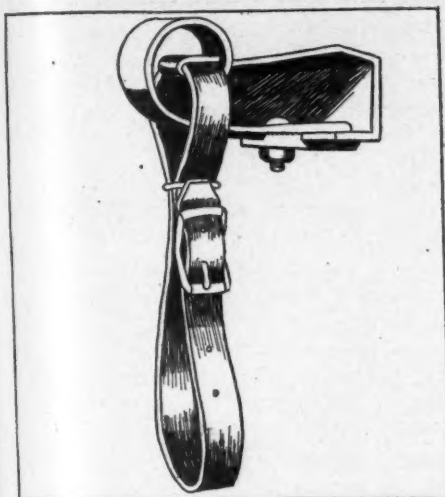


FIG. 4—PACIFIC SINGLE REBOUND STRAP

the mirror, and the bothersome clogging due to the minute size of the lava orifices, are eliminated by this burner, it is claimed. The Roni burner is cleaned with an ordinary tooth brush. It is claimed to be superior to single-jet burners, in that, owing to its peculiar construction, it burns more air than other burners.

## Black Eagle Spark Plugs

At least two distinctive features distinguish the Black Eagle plug, which is the product of the Standard Co., Torrington, Conn. The first of these is the sparking points, which are two in number. Their arrangement may be seen in the end view in Fig. 2. The central electrode is of the usual straight wire type, the negative electrodes, two in number projecting from the shell, tangent to the central electrode, thus presenting only round surfaces to the spark, which is claimed to prevent pitting. The other is a spring cap, which requires no screwing, is said to be unaffected by vibration and is adapted to receive the old styles of terminals, which are now so cheap, or the plain wire alone if necessary.

## Troy Combination Gearshift Lock

The Troy Carriage Sun Shade Co., Troy, O., has just brought out the Troy auto-

matic auto-lock, Fig. 2. This lock is operated by a combination, and is secured to the gearshift lever, just above the quadrant. A knife latch is dropped into the H-gate, to lock the lever in neutral. This blade passes through a slot in the lever, so all of the strain comes on the lever, and not on the lock itself. It is held down by a bolt, secured by a triple or quadruple disk combination, which is operated by a series of buttons. These are each pressed a certain number of times to open the combination. This combination may be adjusted by the owner by removing the face-plate of the instrument. This only can be done by the aid of a key, which only can be inserted with the combination in the unlocked position. When locked, the lever or H-plate must be cut or broken, it is claimed, to move the lever. It does not prevent the moving and steering of the car by hand if necessary, to remove the car from the garage, in case of fire. It is offered in two styles with either triple or quadruple disk combinations.

## Tire Wrapping Machine

In retreading tires, one of the most difficult features of the repair is the wrapping of the tread bandage. This usually requires the services of an expert of skill, great physical strength and fidelity. To make this operation practicable where the services of such a man are not available, R. G. Rossman, of Seattle, Wash., is manufacturing a tire bandage wrapping machine, which does this work mechanically, and without

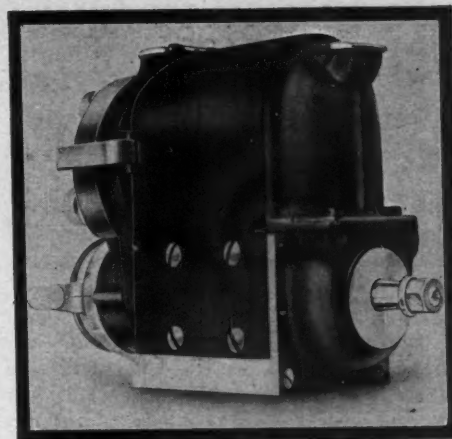


FIG. 6—DRIVING END OF BOSCH WATER-PROOF MAGNETO

the exertion of excessive labor on the part of the operative. The device consists of a forked frame in which the tire is held. The wrapping machine is mounted to the tire by three rollers, and in action is simply rotated about the tire, a bandage spool holding the wet bandage under pressure. The operator rotates the machine about the tire, which wraps it evenly and with uniform pressure. The device will wrap any size tire from 2½ inches to 6 inches tread, and any diameter. Any type of retreading rim may be used.

## Pacific Leather Accessories

Fig. 4 illustrates a jounce preventer which consists of an ordinary rebound strap, equipped with chrome vanadium steel springs, which cushion the restraining effect, and give the springs a velvety action. Fig. 3 shows a double type of recoil check for special installation, where the single type cannot be applied. These appliances are products of the Pacific Leather Works, Oakland, Cal. Numerous other leather accessories are included in its line, including inner and outer blow-out patches and preventers, belts and belt lacing, and tire treads.

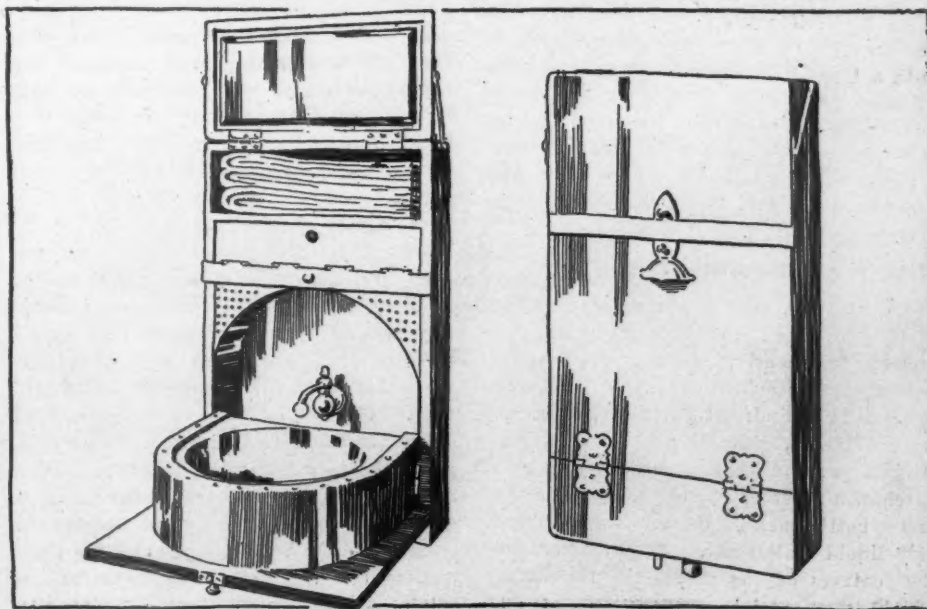


FIG. 5—SANDS FOLDING MOTOR CAR LAVATORY FOR TOURING

## New Electric Headlight Car Lamp Has Quick Re- movable and Demount- able Bulb Socket

SEVERAL new wrinkles are embodied in the design of Electric Star Headlights, which are manufactured by the Milwaukee Bronze Casting Co., Milwaukee, Wis. In Fig. 8 is shown a three-quarters rear view of the style D headlight, showing the quick-change bulb feature. The bulb is mounted on an insulated hub, which is equipped with a small thumbscrew used to adjust the focus. This hub carries all wiring, and is self-contained, being well adapted to use as a trouble lamp. It is inserted or removed from the body of the lamp by a simple twist, a lock nut, shown in the cut, holding it firmly in place. The body of the lamp is of cast silver-aluminum, about 3-16 inch thick, the interior being parabolic in form and brought to a high polish. This form of reflector, besides its obvious advantages of lightness and simplicity, is proof against tarnish, and because of a slight bluish tint, improves the quality of the light, it is claimed. No solder or rivets are used in the construction of these lamps, and the lenses are laid in rubber, to prevent their rattling or becoming cracked by road vibration. The bulbs are secured by the Edi-swan bayonet catch base, which makes them immune to road vibration. The complete line includes headlights, sidelights, auxilliary headlights, to be applied to gas lamps; and tail lights, all of which are electric, in various candle-powers.

### Cummings Valve Lifter

Small in size, light in weight, and simple in construction, the Cummings spreading plier, made by the Cummings Plier Co., Canton, Ohio, is used in lifting valves. The jaws are made with two prongs, to enable them to encircle the valve stem, and are made thin at their ends, to enable them to be inserted between the coils of the spring, if necessary. They are made with a hinge joint, which permits them to be reversed and a ring clamp to fit over the ends of the handle to hold the jaws apart. They weigh 14 ounces each, and are 8 inches long, which makes them convenient to be carried in the tool-kit.

### Cold Vulcanizing Without Acid

U-Vulk is a new vulcanizing compound that is claimed to vulcanize tires and tubes permanently, without the use of either heat or acids. It is sold in outfits, packed in cylindrical cartons, 7 $\frac{3}{4}$  inches by 2 $\frac{1}{2}$  inches, containing a roll of linen-backed para rubber, a dozen inner tube patches, a sheet of car cloth, two brushes, and a bottle each of U-Vulk liquid rubber and liquid vulcanizer. These latter are the features of the outfit, the former of which is a special preparation of extremely tacky rubber, that with the aid

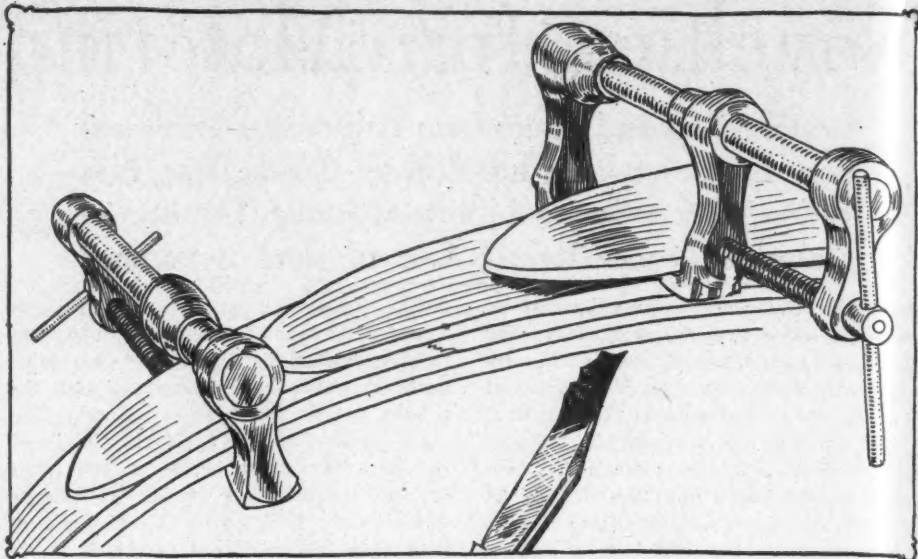


FIG. 7—SPRING LEAF SPREADER AND CLAMP

of the latter, which is an especially compounded cement, readily unites with rubber. Full directions are inclosed in the outfit for making every kind of tire repair.

Among the advantages claimed for this process of repair, the fact that no heat or acid is used, is urged as a factor of time saving, safety to the tire, and safety to the user; the ease and dispatch with which cuts may be filled, and digouts patched up, is advanced as a measure of economy and prevention of blowouts, as

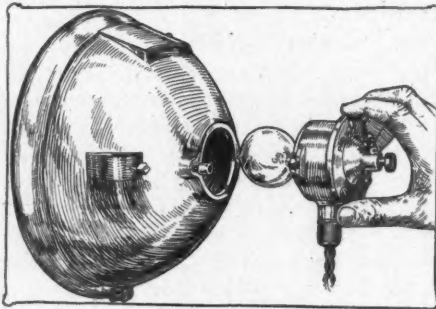


FIG. 8—ELECTRIC STAR HEADLIGHT

most repair shops will not bother with such trivial repairs, which none the less rapidly develop into blowouts if neglected; and that punctures in tubes may be vulcanized by this process is less time than is usually required to make a cement patch.

### Tire Repair Equipment

Two time-saving appliances have just been offered by the Williams Machine and Foundry Co., Akron, O., to aid in retreading tires. The first of these is a quick-opening steel tire kettle of the vertical type that is designed to save time and tires. The lid of this kettle is secured by means of a turnbuckle at its center, which bears against an overhead crane, no bolts being used to secure it. It has a grating at its bottom, that raises the tires above the bottom, and prevents their resting in water, permitting steam to circulate entirely around them. Its capacity is four tires of under 42 inches in diam-

eter, and is tested to 75 pounds steam pressure.

The other device is a tread rolling machine that accomplishes by machinery an operation which, if done by hand, is one of the most difficult in the tire shop. The new arrangement consists of a pair of rollers, convex and concave, respectively, mounted on an iron frame. The upper roller is raised or lowered by means of a large hand wheel at the top, to permit the tire to be inserted. Turning a crank rotates the tire by means of the lower roller, springs in the connections to the upper roller maintaining an even pressure on the tread.

### Spring Leaf Lubricator

The Spring Leaf Lubricator Co., Ann Arbor, Mich., has made the lubrication of springs easy by a wedge tool, Fig. 7. This tool is simply a double wedge screw clamp, and consists of a round shaft, to either end of which are secured respectively a solid foot and an arm, between which a sliding jaw is placed. This jaw corresponds in shape with the foot, having a wedge tooth projecting at right angles in opposition to a similar projection on the foot. A screw, ball-jointed to the sliding jaw, and threaded to the solid arm, is turned by means of a cross rod to slide the jaw toward or away from the opposing foot. To lubricate the leaves of a spring, the tool is spanned across the spring. With the points of the wedge teeth inserted between two leaves, and the screw turned up until the leaves are well separated, when a little oil, grease or graphite is placed in the crack, and the tool removed. It is also adapted for use as a temporary clamp in case of a broken leaf, as shown.

### Non-Mercury Rectifier for Charging

Operating on the electrolytic instead of the mercury vapor principle, the Sirch Rectifier, a product of the Sirch Electrical and Testing Laboratories, Los Angeles, Cal., is claimed to be one of the smoothest of small rectifying devices. By means of a pair of condensers immersed in a

special solution and a coil consisting of a laminated soft iron core, wound with insulated wire in a closed magnetic circuit, a steady even flow of direct current is produced from an alternating current without the use of wasteful resistance, and without the irregularity attendant upon most rectifiers of the mercury arc or mercury vapor type. So steady is the product of this device, it is said, that it has heretofore been used almost exclusively for telephone duty, where the requirements are perhaps the most severe on any rectifier.

The efficiency of this device is said to be in a large measure the result of the form of solution employed, which, it is asserted, does away almost entirely with the cleaning or replacement of the electrodes, due to the fact that the solution acts as a solvent of the oxy-hydrate which tends to form on the electrodes. It is also claimed that the solution is stable and of long life.

#### Automatic Tire Pump

Driven from the flywheel, the Little Trojan automatic tire pump is marketed by Woodward and Son, Toledo, O. The pump is of the cylinder and piston type, and is mounted by an adjustable bracket to the frame or subframe of the car, deriving its power from friction against the flywheel. It is claimed that this pump, owing to its mounting, may be applied to cars which could not be equipped with any other make of flywheel pump. It is simple and automatic, being operated from the dashboard. When set for a certain pressure it will inflate the tires to just that pressure, it is claimed, automatically releasing itself when the designated pressure has been obtained. It is said to require less lubricant than any other pump of its type, and when the special vegetable lubricant furnished by the manufacturers is used, is said to be non-injurious to the tires.

The use of these devices is to be strongly advised as a measure of prolonging the life of the tire, as through the saving of time and labor effected by them, owners are less liable to run on soft or deflated tires, or to under inflate them, as they are prone to when forced to pump them up by hand.

#### Rubber-Aer

Similar to others of the rapidly increasing array of air substitutes for pneumatic tires, but with unique claims, Rubber-Aer, is marketed by The Rubber-Aer Sales Co., of New York. The substance is a composition of ingredients and chemicals, which in combination resembles rubber, but are claimed to be more lively and resilient. It is prepared for use by melting and injecting it into the tire tube, chemicals being added which solidify it and render it insoluble. After this treatment, it cannot be again melted, and will stand heat to the extent of 175 degrees beyond the melting point of rubber. It is injected into the tube through a

special valve under pressure. This pressure may be made as high as needed, in the same manner as air.

Claims are made that this substance excludes air from the interior of the casing, and therefore relieves it of the harmful effects of air; that Rubber-Aer contains ingredients beneficial to the longevity of rubber; that the casing may be used until worn far beyond the limit of usefulness, when inflated with air; that it will not become hard or dry, or crumble; that it will not flatten under the standing weight of the car; that it is 33 1/3 percent lighter than other fillers; and that it will stand a temperature of 450 degrees without deleterious results.

#### Men-Do Tire Compound

To take the place of vulcanizing, patching, and acid curing, Men-Do, a product of the Liberty Rubber Co., Orange, N. J., is offered in outfits put up in cartons for use in making roadside tire repairs. This

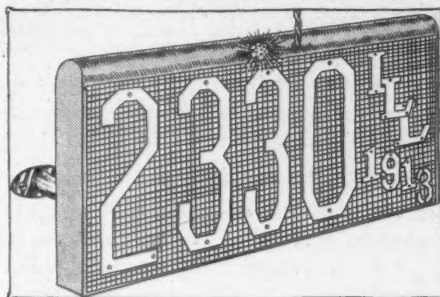


FIG. 9—TESLA ILLUMINATED LICENSE PLATE

substance is a spongy compound of unvulcanized rubber, which is used to fill cuts, digouts, and blowouts in tires, and to patch punctures in tubes. It is said to weld itself firmly to the rubber and to become a part of the tire or tube. No heat is required in its use, only the customary scarification with emery or sandpaper, and treatment with gasoline for the purpose of softening the rubber to facilitate the colloidal union between the two substances. A liquid cement is applied to the rubber surface before the application of the compound. The Men-Do is then thoroughly kneaded and worked into the surface to be repaired.

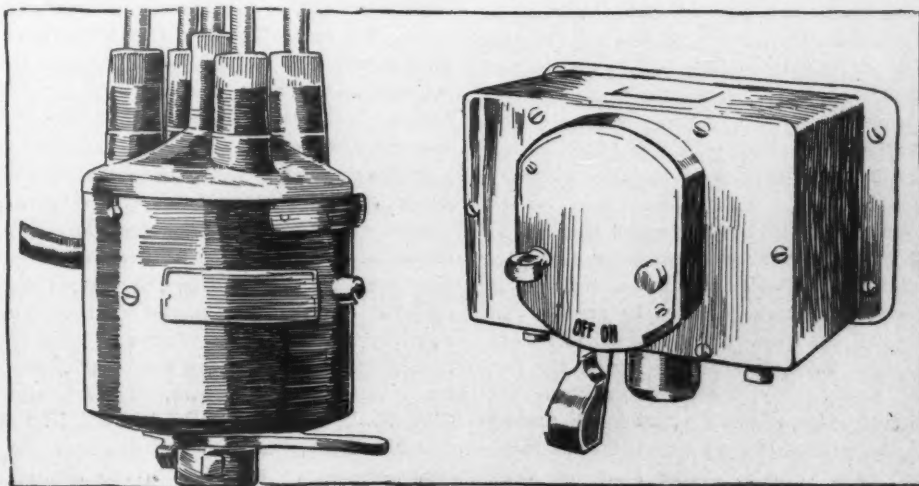


FIG. 10—ATWATER KENT UNISPARKER AND COIL

## New Unisparker Model Mechanical-Break Vibratorless Ignition System Improved for Coming Season

ADAPTED for use in conjunction with the electric starting and lighting systems that are rapidly becoming standard in cars of all classes, the Atwater Kent ignition system is offered for the new season with several improvements and the additional feature of automatic spark advance. The new instrument, Fig. 10, designated as Type K, operates on the same principle as past models, viz., the production of a single hot battery spark at the exact sparking moment, the current being broken mechanically instead of by means of the usual vibrator. The primary circuit is completely insulated, making this system especially adapted to use in cars having electric starting and lighting systems. Among the claims of the manufacturer for this device are extreme silence, absence of improper timing at any speed, absence of primary grounds, and economy of current. The coil, which is non-vibrating, is furnished with either a standard or kick switch equipment, with a starting button.

#### Tesla Illuminated Number Plate

To enable motorists to comply with the stringest laws affecting the lighting of the license number, that have been enacted in several of the large cities, the Tesla Transparent Steel Number Plate has been brought out by the Tesla Transparent Steel Number Plate Co., of Chicago. This accessory, Fig. 9, consists of a metal box, the front covered with wire gauze, to which the numbers are riveted. The inside is enameled in flat white, which is said to diffuse the light better than bright metal or enamel. A small electric lamp in the top of the box, shines through a ruby lens, thus taking the place of the tail light. The plate is equipped with either parallel or angle brackets, to be attached in a convenient position at the rear of the car.

**MONTREAL**—The Bellerive garage is handling the Mitchell car locally.

**Kansas City, Mo.**—The George L. Schofield Motor Car Co. has organized to handle the Marion line.

**New York**—Manager C. S. Henshaw, of the Thomas Motor Co., has established temporary quarters in the Automobile building, 1926 Broadway, New York.

**Philadelphia, Pa.**—Herbert S. Landell has been appointed retail sales manager of the new Oakland Philadelphia factory branch, 506-508 North Broad street.

**Boston, Mass.**—S. J. Wise & Co., eastern distributor of the Amplex and King cars, have discontinued their branch in Boston and will do all its business for the New England territory through the New York headquarters.

**Buffalo, N. Y.**—Joseph C. O'Rourke, for the past 6 years connected with the Pierce-Arrow Sales Co. here, has resigned to assume management of R. G. Danahy & Co., local Lozier agents, at 846 Main street.

**Tulsa, Okla.**—The Tulsa Automobile and Mfg. Co., which makes light delivery motor wagons for oil-field work, has elected the following officers: President, M. A. Younkman; vice-president and general manager, George H. Seager; secretary and treasurer, Schuyler C. French; superintendent, M. A. Campbell.

**Montreal**—A new taxicab company to operate in Montreal has been given letters patent by the lieutenant governor, under the name of the Mount Royal Garage Co., with half a million dollars capital. The promoters are James A. Brooks, George Ross, Senator F. L. Beique, F. A. Beique, and L. J. Beique.

**New York**—Ray P. Johnson has been appointed general manager of the Warner Gear Co., of Muncie, Ind., to succeed C. E. Davis, who has been named general manager of the motor car department of the American Locomotive Co. at Providence. Mr. Johnson received his technical education in the scientific department of the Chicago university.

**Columbus, O.**—The Park Motors Co. is the name of a corporation to be chartered soon under the laws of Ohio, to have an authorized capital of \$150,000, for the purpose of manufacturing both gasoline and electric cars. The promoter of the corporation is Scott Van Etten, formerly with the Columbus Buggy Co., of Columbus, in the capacity of head of the repair department.

**Toledo, O.**—What is claimed will be one of the finest car salesrooms in this part of the state will soon be established in the new business block to be erected corner of Madison avenue and Fifteenth streets. L. E. Barger has leased the corner room. Mr. Barger represents the Abbott Motor Sales Co., with the agency of the Abbott-Detroit and the Pope-Hartford cars. The adjoining room has been leased by Charles J. Lauer, Toledo agent

# Brief Business

## RECENT INCORPORATIONS

**Augusta, Me.**—Mathlessen Spring Cushion Wheel Co.; capital stock, \$60,000; directors, R. S. Russell, L. J. Coleman, C. L. Andrews.

**Brooklyn, N. Y.**—Mears Motor Vehicle Co.; capital stock, \$600; incorporators, J. W. Mears, E. A. Kellam, C. Mears.

**Brooklyn, N. Y.**—Monarch Auto Trucking Co.; capital stock, \$5,000; incorporators, D. R. Rice, H. Person, W. H. Babcock.

**Brooklyn, N. Y.**—Haab Garage Co.; capital stock, \$2,000; directors, E. Haab, O. Hanman, L. Haab.

**Camden, N. J.**—Hub Twenty-Second Street Garage Co.; capital stock, \$100,000; incorporators, F. R. Hansell, G. H. B. Martin, I. C. Clow.

**Camden, N. J.**—Blackstone Sales Co.; capital stock, \$2,500; motor car supplies; incorporators, C. M. Fletcher, I. F. Goodrich, F. Ihrig.

**Chicago**—Schillo Motor Sales Co.; capital stock, \$15,000; to manufacture and deal in motor cars; incorporators, L. Lorimer, E. W. Schillo, A. G. Schillo.

**Chicago**—Automobile Accessories Co.; capital stock, \$25,000; incorporators, A. Marelli, F. J. Jackson, F. D. Marelli.

**Chicago**—South Park Automobile Garage Co.; capital stock, \$250,000; incorporators, G. Frank, H. J. Lurie, J. L. Anderson.

**Cleveland, O.**—Cadillac Automobile Co.; capital stock, \$50,000; to deal in motor cars and parts; incorporators, T. B. Bolton, W. Mariatt, F. H. Pelton, M. Jenkins, E. D. Hayes.

**Cleburne, Tex.**—Cleburne Motor Car Co.; capital stock, \$10,000; incorporators, H. E. Lucir, W. P. Ball, B. Doughlas.

**Cincinnati, O.**—Federal Motor Supply Co.; capital stock, \$250,000; to manufacture and sell motor cars, parts, etc., incorporators, G. W. Platt, E. C. Schmitt, R. L. Dollings, A. M. Braddy, M. F. Platt.

**Dallas, Tex.**—Havoline Auto Supply Co.; capital stock, \$10,000; incorporators, F. E. White, E. Hobby, J. W. Crotty.

**Dover, Del.**—Imperial Garage Co.; capital stock, \$25,000; director, W. P. Lofland.

**Elyria, Ohio**—Auto Sales Co., capital stock, \$10,000; to deal in motor cars; incorporators, W. G. Bennett, I. W. Eyon, F. S. Bates, C. H. Smith, J. J. Dillon.

**Fort Worth, Tex.**—No Patch Tire Filler Co.; capital stock, \$110,000; director, J. A. Reynolds.

**Grafton, W. Va.**—Grafton Motor Co.; capital stock, \$5,000; incorporators, H. J. Pracht, H. D. Caomerford, D. C. Peck.

**Indianapolis, Ind.**—Auto Finishing & Wonder Polishing Co.; capital stock, \$50,000; directors, N. S. Tedrow, J. W. Cummings, J. J. Sheehan.

**Indianapolis, Ind.**—Auto Grand Co.; capital stock, \$25,000; directors, George Oesper, E. B. Pfau, E. Hamman.

**Jersey City, N. J.**—Kosmak Electrical Co.; capital stock, \$10,000; to manufacture horns and signals; incorporators, J. R. Cubit, W. Kosinski, M. U. Curris, A. Curris, J. R. Mack.

for the American and Marion cars, and the easterly room will be occupied by E. W. K'Burg, of the Hupp-Yeats Sales Co.

**Philadelphia, Pa.**—The Zee Zee Tire Co. has established headquarters at Thirty-third and Walnut streets.

**Sparta, Wis.**—William Stokes is erecting a new fireproof garage at Sparta, to be 50 by 90 feet in size. The garage will be managed by A. H. Scheppeke.

**St. Louis, Mo.**—The Moon Motor Car Co.'s growth has necessitated the opening of a salesroom and agency in St. Louis to help the factory take care of the Moon business in that city. The new agency is the Lewis Automobile Co., located at 4108 Olive street, of which J. D. Perry Lewis is the president.

**Columbus, O.**—The Neil-Fourth garage is the name of a new concern opened in a new four-story building at 241 West Fourth avenue, to do a general garage and repair business. The concern is equipped with a complete repair plant and a charging apparatus. There is about 9,000 square feet of floor space. S. Van Etten is manager of the company.

**Philadelphia, Pa.**—The Automobile Service Association, a mutual service corporation launched about a year ago, the main offices of which are located at Fifty-second and Chestnut streets, has opened its twelfth branch, at Lancaster, Pa. In addition to the main office and several branches in this city, the association now has branches in Lancaster, Pa.; Atlantic City, N. J.; Camden, N. J.; Pitman, N. J., and Morriston, Pa., and contemplates the establishment of branches in the leading cities of Pennsylvania and New Jersey.

S. M. Waas is president of the association and G. W. Carrington vice-president and general manager.

**South Bend, Ind.**—John W. Nikart, proprietor of the Michigan avenue garage, has taken over the agency for the Maxwell.

**Milwaukee, Wis.**—Clarence R. Kilbourne, for the past year Milwaukee representative of the Case, has resigned to become general manager of a new company which will distribute the Kisselkar in Canadian territory, with headquarters at Alberta, Can.

**Boston, Mass.**—George L. Dodd, a dry-goods merchant, and Charles E. Cousens, a member of the big banking firm of Downer & Co., are the two men who have put up the money for the new Pope-Hartford agency in the Hub. The former is president and the latter treasurer. Fred P. Lucas is sales manager. E. P. Dodge, who had the agency, has retired because of ill health.

**Toledo, O.**—Work on a new building to be occupied by the Landman-Griffith Motor Co., will be started immediately, and the place will be ready for occupancy December 1. It will cost about \$25,000. The new building which will be erected on Madison avenue corner Fourteenth street, will consist of one story and basement. There will be a 40-foot frontage on Madison avenue. Plans for the building are unique, practically all of the two street sides to be made of glass, giving a complete exposure for the large sales room. Flanders cars, gasoline and electric will be handled. Charles P. Landman, formerly vice-president of the Blevins Automobile

# Announcements

## RECENT INCORPORATIONS

**Kittery, Me.**—Co-Operative Rubber Co.; capital stock, \$500,000; to manufacture tires and rubber goods; incorporators, H. Mitchell, H. A. Paul.

**Louisville, Ky.**—Corydon, New Albany & Greenville Automobile Co.; capital stock, \$2,000; incorporators, J. M. Ferguson, H. Rohlfing, J. Schlimler.

**Marietta, O.**—Gerhart Spring Tire Co.; capital stock, \$15,000; to manufacture motor car wheels; incorporators, J. A. Gerhart, G. O. Salzman, C. Hopp, O. C. Mohler, A. A. Schramm.

**Minneapolis, Minn.**—Twin City Motor Service Co.; capital stock, \$50,000; incorporators, F. L. Gross, Abner G. Showers, W. A. Alden.

**New York.**—Industrial & Trading Co.; capital stock, \$5,000; general commission business in motor vehicles and parts; incorporators, A. M. Becker, J. A. Lemlin, E. H. Ferguson.

**New York.**—New York Garage Association; capital stock, \$2,000; general garage keepers' exchange; incorporators, C. H. Potter, L. J. Joscelyn, W. Burrows.

**New York.**—Forty-Fifth Street Garage; capital stock, \$1,000; incorporators, P. R. Towne, H. C. Knapp, R. H. McIntyre, Jr.

**New York.**—Acton Taxicab Co.; capital stock, \$2,000; incorporators, O. J. Griffin, W. Oakford, F. Oakford.

**New York.**—Garden Garage Co.; capital stock, \$10,000; incorporators, O. J. Griffin, F. C. Griffin, W. Oakford.

**New York.**—Ames Automatic Shock Absorber Co.; capital stock, \$25,000; to manufacture shock absorbers; incorporators, L. F. Bornelsier, G. H. Edwards, G. Isaken.

**Paterson, N. J.**—Standard Auto Co.; capital stock, \$2,500; general motor car business; incorporators, C. Braun, W. F. Drexler, H. Stoecken.

**Paterson, N. J.**—Standard Garage Co.; capital stock, \$25,000; incorporators, Martin White, S. B. White, O. Harris.

**Portland, Me.**—National Chauffeurs' Association; capital stock, \$500,000; directors, A. F. Jones, T. L. Croteau, J. E. Manter.

**Portland, Me.**—Reliance Speedometer Co.; capital stock, \$100,000; directors, C. M. Drummond, G. M. Horne, W. B. Drummond.

**Raleigh, N. C.**—Motor Sales Co.; incorporators, D. F. Fort, Jr., T. C. Powell, R. H. Merritt.

**Rochester, N. Y.**—Fordham Co.; capital stock, \$3,000; to manufacture and deal in motor cars; incorporators, G. F. Cox, E. A. Reinke, R. Stanton.

**Rochester, N. Y.**—Seiden Truck Co.; capital stock, \$150,000; to deal in motor trucks; incorporators, A. A. Barry, G. G. Gordon, R. E. Salmons.

**Ruston, Ia.**—Malbury Motor Co.; capital stock, \$10,000; incorporators, J. D. Barksdale, W. F. Batson.

**Seattle, Wash.**—Seattle Motor & Wagon Mfg. Co.; capital stock, \$20,000; director, W. J. Beattie.

**Utica, N. Y.**—Otis Motor Sales Co.; capital stock, \$10,000; incorporators, T. H. Ferris, W. T. Cantwell, E. J. Otis.

and costing in the neighborhood of \$100,000. The roof will be of the saw-tooth type.

**Omaha, Neb.**—The Firestone-Columbus Motor Car Co. has taken the agency for Lambert pleasure cars and Mora trucks.

**Montreal.**—The Montreal Automobile Garage Co., Ltd., has been incorporated with a capitalization of \$185,000.

**Chicago.**—The Storage Battery Power Co., 324 South Washtenaw avenue, has increased its capital stock from \$100,000 to \$250,000.

**Haverhill, Mass.**—The Merrimac garage was destroyed by fire last week and six cars and lot of valuable machinery were destroyed. The total loss was estimated at \$10,000 on which there was only partial insurance.

**Minneapolis, Minn.**—The Prest-O-Lite Co., of Minneapolis, has bought 80 by 336 feet of property at Charles and Carlton streets, St. Paul, for \$8,000, and will enlarge.

**Chippewa Falls, Wis.**—H. M. Lucas has been appointed mechanical manager of the Jenkins Auto Co. of Chippewa Falls, Wis. The company has made a large installation of oxy-acetylene welding apparatus and added a large list of equipment and machinery.

**Boston, Mass.**—The Boston Tire and Rubber Co., 182-184 Freind street, has discontinued the handling of unguaranteed casings. The company has now taken on the New England agency for Nassau casings, tubes, reliners, etc., made by the Thermoid Rubber Co., of Trenton, N. J.

**South Bend, Ind.**—Franklin S. Riley, of South Bend, has been appointed factory representative of the Standard Electric Car Co., of Jackson, Mich. He will handle the Standard electric in northern Indiana and southern Michigan. Mr. Riley will have his headquarters at the Smith garage.

**Boston, Mass.**—The Franklin Motor Car Co. has opened salesrooms at 733 Boylston street, recently occupied by the Marquette Motor Car Co. The Franklin quarters at 31 Irvington street have been retained as a garage and service station, the new location being devoted to sales and administration.

**Milwaukee, Wis.**—The W. E. Allen Co., 2807 Wells street, Milwaukee, state agent for the McFarlan six, has broken ground for a new garage building, to be situated at Grand avenue and Thirty-first street. The building will have ground dimensions of 60 by 120 feet, one story and basement high.

**Toledo, O.**—The J. W. Banting Co., which heretofore has conducted a motor car business in connection with its farm machinery store, has taken the general distributing agency for Paterson cars. This concern in the future will conduct the motor car business separately from other interests and has moved into sepa-

Sales Co., is president and W. E. Griffith, formerly connected with the Blevins company, is secretary and treasurer.

**Philadelphia, Pa.**—A new carburetor, the Feps, has recently been marketed by the Schoen-Jackson Co., of Media, Pa.

**New York.**—R. M. Owen & Co. have moved their executive offices and the New York Reo branch to their new quarters at 19-21 West Sixty-second street.

**Milwaukee, Wis.**—The Kopmeier Motor Co., 375-389 Summit avenue, Milwaukee, has been appointed state agent for the Flanders electric, which has been represented by the Flanders Electric Car Co., with headquarters in the Kopmeier garage.

**Hudson, Wis.**—S. N. Palms has been elected president of the Hudson Garage Co. The other officers are: Vice-president, R. E. Mayer; secretary, G. A. Hanson; treasurer, Dr. L. P. Mayer; general manager, Christian Lee. The company is composed of approximately fifty owners of cars in Hudson.

**Pittsfield, Mass.**—Roy S. Bridge and Edward A. R. Brown, agents for the Cadillac line at Pittsfield, Mass., have moved their salesrooms and service station to 128 South street where Stackpole & Luce conducted a garage. The latter firm has dissolved partnership and the business will be carried on by Mr. Luce.

**Tacoma, Wash.**—H. A. Farr, who was in San Francisco a year ago and since then has been manager of the Portland branch of the United States Tire Co., has become manager of the Seattle branch. He succeeds H. A. Jones, who leaves to become manager for Ballou & Wright. C. H.

Mayer, who has been working out of San Francisco, will be promoted to the managership of the Portland branch.

**Kansas City, Mo.**—The J. A. Davis Motor Car Co., of this city, distributor of the Thomas, has been declared bankrupted.

**Boston, Mass.**—The G. E. and H. J. Habich Co., agent for the Cole in Massachusetts, is remodeling its salesrooms on Massachusetts avenue.

**Columbus, O.**—J. B. Hoover, 621 North Fourth street, agent for the Lozier, has moved from East Broad street to 215 East Fourth street with the Coats Motor Car Co.

**Boston, Mass.**—President John H. MacAlman, of the Boston Automobile Dealers' Association, on his return from Europe, decided to enlarge his business and now, in addition to the Boston agencies for the Stearns and Columbia, he has opened up a branch at Providence, with Harry Farrow in charge.

**Columbus, O.**—The Curtin-Williams Automobile Co., 84 North Fourth street, has closed a contract to act as distributor in sixteen counties in central Ohio for the Cadillac in 1913. The company has closed subagencies with the Court Motor Car Co., Marietta and the Valley Motor Co., Zanesville.

**Pittsburgh, Pa.**—Preliminary plans soon will be started for a proposed car storage building to be erected at Twelfth and Sarah street, south side, by a company which is being organized at the present time by Augustus Hartje, 133 Wood street. The building will be constructed of concrete and steel, measuring 275 by 275 feet

## Recent Agencies Appointed by Pleasure Car Manufacturers

Town	Agent	Car	Town	Agent	Make
Atlanta, Ga.	O. C. Drew, Jr.	R. C. H.	Miami, Fla.	William V. Little	R. C. H.
Birmingham, Ala.	Robertson Tire & Auto Co.	Cole	Milford, Mass.	William H. Baker	Oakland
Boston, Mass.	Tyler Brothers Corp.	Chvrolet	Milwaukee, Wis.	Kopmeyer Motor Car Co.	Flanders
Boston, Mass.	Tyler Brothers Corp.	Columbus	Milwaukee, Wis.	Smith-Hoppe Auto Co.	Detroit
Boston, Mass.	Fred H. Lucas	Pope-Hartford	Milwaukee, Wis.	Imperial Auto Sales Co.	Imperial
Burlington, Ia.	Barton-Ford Motor Co.	Cole	Naugatuck, Conn.	Richardson Brothers Garage	Cole
Gardner, Mass.	Brown-Rawson Co.	Metz	Maquoketa, Ia.	Palmer Auto & Supply Co.	R. C. H.
Cedar Rapids, Ia.	Fred E. Koch	Cole	Newton H'lds, Mass.	Woodworth Brothers	R. C. H.
Chicago Heights Ill	William Konow	R. C. H.	Opelika, Ala.	Arthur M. King	Cole
Cleveland, O.	Henry J. Adams	Reo	Pacific Grove, Cal.	Isham J. Dorsey	Cole
Coatsville, Ind.	Frank Johnson	R. C. H.	Petaluma, Cal.	Herbert Nuttall	Henderson
Columbus, O.	M. P. Murnan	National	Pittsburg, Kans.	Charles B. Hunter, Jr.	Nyberg
Columbus, O.	M. P. Murnan	Alco	Pontiac, Ill.	Pontiac Motor Car Co.	Cole
Columbus, O.	M. P. Murnan	Alco	Princeton, Ill.	S. L. Bradley & Co.	Cole
Columbus, O.	Pausch-Selbach Wagon & Auto Co.	Marathon	Providence, R. I.	J. H. MacAlman	Stearns
Columbus, O.	C. E. Ross Garage Co.	Great Western	Providence, R. I.	J. H. MacAlman	Columbia
Columbus, O.	O. G. Roberts & Co.	Overland	Rockford, Ill.	Welch Brothers	Cole
Columbus, O.	O. G. Roberts & Co.	Standard	San Jose, Cal.	J. & R. Auto Co.	Henderson
Columbus, O.	O. G. Roberts & Co.	Stearns	San Marcos, Tex.	E. F. Walker	R. C. H.
Ciarion, Pa.	W. H. Gulland & Co.	Cole	Santa Barbara Cal	E. C. Barry	R. C. H.
Clearfield, Pa.	Wallace Brothers	Cole	Schenectady, N.Y.	Brenner Co.	Detroit
Clairemont, N. H.	Edward F. Cushion	R. C. H.	Sharon, Pa.	Citizen's Auto Co.	Studebaker
Coshocton, O.	Standard Auto Co.	Imperial	Sheboygan, Wis.	Erle Garage Co.	Rambler
Cynthiana, Ind.	A. D. Barton	R. C. H.	Sheyenne, N. D.	L. S. Rudy	R. C. H.
Eau Claire, Wis.	Tanbert Auto Co.	Cole	Springfield, Mass.	Blue Ribbon Garage	Palmer-Singer
Fargo, N. D.	William Ball	Kissel	Springfield, Mass.	Blue Ribbon Garage	De Tangle
Fort Plains, N. Y.	Alphonso Walrath Co.	Franklin	Springfield, Mass.	Dunbar Motor Co.	Overland
Fredonia, Kans.	J. W. Paulen	R. C. H.	Springfield, Mass.	Dunbar Motor Co.	Abbott-Detroit
Fresno, Cal.	L. E. Grider	Henderson	Springfield, Mass.	Dunbar Motor Co.	Elmore
Gardner, Mass.	Brown-Rawson Co.	Jackson	Springfield, Mass.	Dunbar Motor Co.	Standard
Gardner, Mass.	Brown-Rawson Co.	Nyberg	Stockholm, Sweden	Backdahl & Co.	Cole
Greenfield, Mass.	E. E. Shaw	R. C. H.	Stockton, Cal.	S. F. Ruff	Henderson
Indianapolis, Ind.	E. M. Holmes	Cutting	Sulphur Springs, O.	D. E. Schwab	Nyberg
Johnstown, Pa.	Daniel Statter & Co.	Cole	Tacoma, Wash.	American Automobile Co.	Stearns-Knight
Kansas City, Mo.	A. D. Wright	Nyberg	Tekamah, Neb.	Fred Carlson	Cole
Lewes, Del.	W. E. Wain	Hudson	Thurman, Ia.	Thurman Motor Car Co.	Cole
Lindsay, Cal.	E. C. Graham	Henderson	Toledo, O.	Bunnell Auto Sales Co.	Cole
Logansport, Ind.	H. C. Cragun	Nyberg	Toledo, O.	E. W. Burg	R. C. H.
Louisville, Ky.	Miles Auto Co.	Cole	Wibaux, Mont.	Wibaux Auto Co.	Franklin
Louisville, Ky.	Younger Auto Co.	Franklin	West Liberty, Ia.	West Liberty Auto Co.	Cole
Lynn, Mass.	Sibley & Green	Studebaker	Williamsport, Pa.	William Scheffer	Cole
Lynn, Mass.	Sibley & Green	Hudson	York, Pa.	T. S. Pfeiffer	Chadwick
Medarysville, Ind.	Guild & Hackley	Nyberg	York, Pa.	J. W. Richley Auto Co.	Rambler
Menessen, Pa.	Carmine Coccari	R. C. H.			

rate quarters. J. W. Banting is the head of the concern. John Gazely will manage the car branch.

**Kansas City, Mo.**—The Williams Motor Car Co., for many years distributor for the Locomobile, has changed from this car to the Alco line.

**Appleton, Wis.**—Joseph Kronzer and John A. Schmidt have organized the Appleton Garage and Auto Co., at Appleton, Wis., and are building a two-story garage, 48 by 120 feet in size at a cost of \$15,000. Agency lines have not yet been selected.

**Seattle, Wash.**—P. E. Sands, formerly manager of the Seattle branch of the Studebaker Corporation, has again entered the motor car field after an absence of 8 months, this time as manager of the motor car department of the Waterhouse Trading Co., Seattle, agent and distributor of the Garford truck and touring car.

**Racine, Wis.**—The Mitchell-Lewis Motor Co., of Racine, Wis., has sold its entire delivery, spring and mountain wagon business to the Staver Carriage Co., of Chicago. The department formerly devoted to the production of wagons of this class will be used for additions to the body, trim and paint shops of the motor car works.

**Marshfield, Wis.**—Orrin R. Hughes, Marshfield, Wis., state agent for the Garford and Flanders, with a branch at Milwaukee, Wis., has disposed of his garage and shops at Marshfield and will devote his attention exclusively to the selling of these cars in the wholesale and retail fields. The garage will be conducted by a new firm under the style of Hub City

Auto Co., the principal owners being Robert Herrick and John MacDonald.

**Toronto, Ont.**—The Russell Motor Car Co. has installed in its local plant additional machinery, the total cost of which was \$100,000.

**Philadelphia, Pa.**—Franklin E. Hodge will be placed in charge of the garage service and supply department of the new headquarters of the Automobile Club of Philadelphia, Twenty-third and Market streets, when opened.

**Omaha, Neb.**—The Omaha Auburn Auto Co. has moved into its new garage at Twenty-sixth and Farnam streets. It is a large one-story building, built especially for the company. The Cole Motor Co. has moved into the garage which the Omaha-Auburn Co. vacated, at Nineteenth and Farnam streets.

**Columbus, O.**—The Hudson Sales Co., 145 North Fourth street, closed contracts as distributor for the Hudson in twenty-two counties in central Ohio for 1913. The same concern will act as distributor for the American in sixteen counties in central Ohio. The same company will also act as local agent for the Buick in Franklin and Licking counties.

**Winnipeg**—Walter George Chater, manufacturer; Harry Anderson, manufacturer's agent; George Huntingdon Ross, barrister-at-law; Douglass Nicholson, student at law, and Harry Folliott Gyles, student-at-law, have been incorporated under the name of the Tudhope Automobiles, Ltd., for the purpose of engaging in the motor car business. The company is capitalized

at \$60,000 with chief place of business at Winnipeg.

**Detroit, Mich.**—The Hupp Motor Co. has leased the large show room at the corner of Woodward and Willis avenues, originally leased by the Cole Motor Co., of Indianapolis. This company placed its car in an agency which occupies the former quarters of the Oakland company and has sublet the corner to the Hupp company for a term of years.

**Detroit, Mich.**—W. C. Anderson, of the Ford Motor Co., has gone to Minneapolis where quarters for a large assembling plant has been located temporarily while a great building is being erected. Work on this building will start immediately and it will take 9 months to complete. The Ford company plans to assemble 10,000 cars at this point for 1913.

**Detroit, Mich.**—H. N. Dunbar, formerly with the King Motor Car Co., has taken a position with the Ford Motor Co., with which concern he was associated some 6 years ago. He later left the Ford company to go with the H. H. Franklin Mfg. Co., coming to Detroit at the time of the organization of the King company, assuming the position of sales manager.

**Lynn, Mass.**—Elmer E. Bray, vice-president of the Lynn Automobile Dealers Association, has retired from the motor business. He intends to take a trip around the world, and on his return probably accept a position with a large company in New York. Sibley & Green, owners of the Liberty garage, have succeeded him in the motor business and they will carry

on the garage as well as take the agency for the Studebaker and Hudson cars and Chase and White trucks.

**Athens, N. Y.**—Plans are being made for the reconstruction of the Athens Motor Co.'s garage, which was burned down last week.

**Omaha, Neb.**—P. B. Day, recently assistant sales manager of the Empire Co. of Indianapolis, is now with the Oldsmobile Co. of Omaha.

**San Francisco, Cal.**—The Frank O. Renstrom Co., of San Francisco, has taken over the agency for the Regal cars in all of northern California and the state of Nevada.

**Columbus, O.**—The Resilio Tire Filling Co. is the name of a new concern which has opened a salesroom and shop at 115 North Wall street, to fill tires by a patented process.

**Detroit, Mich.**—George N. Matheson, for many years purchasing agent for the National Motor Vehicle Co., Indianapolis, has become purchasing agent for the Hayes Mfg. Co.

**Kansas City, Mo.**—A new company has been organized to handle the Cole in this city. J. H. Runcie and H. J. Clark compose the new company, which is to be known as the Cole Motor Co.

**Syracuse, N. Y.**—Edward P. Young, formerly a dealer of St. Catharines, Ont., has taken the agency of the Flanders six in this territory and has opened a salesroom at 694 South Salins street.

**South Bend, Ind.**—Harry Stillman, formerly an engineer with the Olds Motor Works, Lansing, Mich., has succeeded George Salzman, factory superintendent of the Amplex Motor Car Co., of Mishawaka, Ind.

**Detroit, Mich.**—Fred W. Thomas, for many years connected with H. A. Lozier & Co. when that concern was manufacturing Cleveland bicycles and more recently general traveling representative of the E. R. Thomas Motor Car Co., has been appointed special traveling representative of the Lozier Motor Co. in New

York and Pennsylvania. Mr. Thomas succeeds W. L. Davis formerly eastern traveling representative of the Lozier Motor Co.

**Minneapolis, Minn.**—J. W. Martin, manager of the Oakland Motor Co. branch, 1518 Hennepin avenue, has opened a branch at Main and Sixth streets, St. Paul. It will be in charge of C. P. Berglund.

**Kansas City, Mo.**—E. J. Kilborn, former manager of the local Mitchell branch and who has joined the General Motors staff, has been succeeded by S. J. Horner and E. C. Byers, formerly of the Philadelphia branch.

**Detroit, Mich.**—J. R. Thibedeau, formerly connected with the purchasing department of the Abbott Motor Co., has been made assistant manager of the technical and service department of the same company.

**Boston, Mass.**—George Tolman and Edward H. Houtz have formed the Massachusetts Automobile Clearing House with headquarters at 108-110 Massachusetts avenue. They have arranged with a number of the local dealers to handle the second-hand cars taken in trade.

**Columbus, O.**—The Coats Motor Car Co., is the name of a new concern located at 215 North Fourth street, which handles the Commercial trucks and the Century Electric pleasure cars in central Ohio. A. B. Coats, formerly with the Columbus Dry Goods Co., is manager of the concern.

**Minneapolis, Minn.**—The O. Fenstermacher Co. has been incorporated with \$300,000 capital. The company will handle supplies. Mr. Fenstermacher is agent for the Firestone tires. Incorporators of the company are: O. Fenstermacher, T. O. Fenstermacher and Fred Chambers.

**Milwaukee, Wis.**—Coerper Brothers, of Milwaukee, have awarded contracts for the construction of a \$20,000 garage on Grand avenue between Twenty-seventh and Twenty-eighth streets. It will be 60 by 120 feet in size and two stories high. Coerper Brothers are the third to invade the exclusive Grand avenue residence dis-

trict, the other firms which are building in the vicinity being the Packard Motor Car Co. and the W. E. Allen Co.

**Moose Jaw, Sask.**—The first motor car factory in western Canada will be located here. The St. Louis Car Co. will employ 100 men and turn out an all-Canadian car.

**Syracuse, N. Y.**—The Genesee Motor Car Co. announces the establishment of a new service station for Cadillac car owners at 345 W. Jefferson street adjoining the Chase motor truck service station.

**San Francisco, Cal.**—Walter Nelson Hunt, formerly of San Francisco, is now manager of the Sacramento branch of the Pacific Motor Car Co., agent for Stevens-Duryea, Woods electric and Cole cars.

**Milford, Mass.**—William H. Baker, owner of the Milford garage, has become the Worcester county agent for the Oakland car. He has opened another station and garage at 36 Central street, Worcester.

**Gardner, Mass.**—The Brown-Rawson Garage Co. has moved into the Knowlton building that has been renovated for its use and it has the agency now for the Metz, Jackson and Nyberg cars and Essenkay tire filler.

**Boston, Mass.**—F. B. Wilcox, who has the Lippard-Stewart truck and the Schacht car in Boston, has secured salesrooms at 34 Merchant's row, which is in the downtown business section, far removed from the motor colony.

**Springfield, O.**—Frank R. Talbott has become affiliated with the Victor Rubber Co., of Springfield, O. Frank B. Patrick also has accepted a position with the same company and will be in charge of the advertising department.

**Detroit, Mich.**—J. P. Winterson, formerly connected with the eastern sales department of the Lozier Motor Co., in New York City, has been appointed special traveling representative for that company to cover territory in the southwest. Mr. Winterson will travel through the states of Colorado, Kansas, Missouri, Arkansas, Texas, Oklahoma, New Mexico and Louisiana.

## Recent Agencies Appointed by Truck Manufacturers

Towns—	Agent	Car	Towns—	Agent	Car
Albany, N. Y.	Simmons-Newell Auto Co.	Chase	Petaluma, Cal.	Joseph Peoples	Federal
Albany, N. Y.	Robert F. Payne	Vellie	Phoenix, Ariz.	Wesley Hill Garage	Federal
Auburn, Cal.	H. W. Davis	Federal	Richmond, Va.	Oakland Auto Co.	Federal
Augusta, Ga.	Lombard Iron Works & Supply Co.	Federal	Rochester, N. Y.	J. Cunningham	Federal
Bakersfield, Cal.	Ben L. Brundage	Federal	Sacramento, Cal.	J. D. Lauppe	Federal
Cent'l V'l'ge, Conn.	U. LaFrance	Federal	Schenectady, N. Y.	Sterling Garage	Federal
Chattanooga, Tenn.	L. S. Mitchell Auto Co.	Federal	San Diego, Cal.	P. M. Price	Sanford
Columbus, O.	O. G. Roberts & Co.	Gramm	Springfield, Mass.	Dunbar Motor Co.	Krebs
Dayton, O.	S. C. Crane	Franklin	Stockton, Cal.	Sampson Iron Works	Federal
Elyria, O.	Edward E. Critz	Sanford	St. Charles, Ill.	C. S. McCormack	Federal
Evanston, Ill.	George C. Foster & Co.	Federal	Syracuse, N. Y.	T. A. Reed & Co.	Standard
Hammond, Ind.	E. C. Minas & Co.	Federal	Syracuse, N. Y.	A. J. Jackson	Federal
Jamestown, N. Y.	Edwin Wells	Federal	St. Louis, Mo.	Allen Baker	Dayton
Kansas City, Mo.	Southwest Motor Car Co.	Detroit	St. Louis, Mo.	Federal Truck Co.	Federal
Kansas City, Mo.	Holker & Elberg	Peerless	Traverse Cy, Mich.	Traverse City Iron Works	Federal
Lynn, Mass.	Sibley & Green	White	Pueblo, Colo.	Ideal Motor Car Co.	Federal
Lynn, Mass.	Sibley & Green	Chase	Toronto, Ont.	Central Garage & Supply Co.	Federal
Manassas, Va.	F. A. Cockrell & Co.	Sanford	Vancouver, B. C.	H. J. Tucker	Federal
Monticello, Ky.	G. O. Bassett	Federal	Victoria, Vanc. Is.	Vancouver Isle Motor Co.	Federal
Montreal, Que.	Francis Hankin & Co.	Sanford	Washington, D. C.	Louis Hartig	Federal
New Haven, Conn.	Alling Garage Co.	Federal	Watsonville, Cal.	H. G. Brewington Co.	Federal
Norwich, Conn.	F. O. Cunningham	Sanford			

# The Mathematics of Motoring

WHEN the motorist decides to equip his car for electric lights the first question that presents itself is whether to use a storage battery alone or a lighting generator with it to furnish the power. Of course the battery alone is the simpler and cheaper, but has the disadvantage of needing frequent recharging if the lamps are used much, while the more complicated generator system is self-charging.

To consider for the time being only the simpler equipment, that of battery, lamps and the necessary wiring, the motorist is at once confronted with two questions, the size of lamps and the size of the battery. The only widely used voltage is 6 volts, and it is well to adhere to this standard, as replacements can be more easily obtained. Inasmuch as the capacity of the battery depends upon the number and size of the lamps used, which means the current output of the battery, the size of the lamps is the first thing to be decided.

There are only three size bulbs now in general use for headlight work, these being respectively 16, 21 and 25-candle power. For small motor cars which travel at comparatively slow speed, and where the owners would be satisfied with light that, while better than acetylene lights usually supplied with these small cars, is still not the most powerful, and where he will not be liable to compare his light with those of friends who have higher power to the detriment of the 16-candle power lamps, 16-candle power is undoubtedly ample. On the higher-powered cars the 21-candle power bulbs are in almost universal use today. These will give an ample light for driving up to a speed of 40 miles an hour at night, illuminating the road far enough ahead so that any object may be observed in time to stop almost as well as in the daylight, and in fact gives all the light that is needed.

Such lamps when used with a shallow parabolic reflector will light a road 50 feet wide for the full width of the road from the front of the car to a point over one-quarter mile away. A deep parabola of the same focus will light the road even further, but will not give as much light at the sides close to the car. Where extremely high-powered cars are used running at very high speed and where very large reflectors can be used, 25-candle power bulbs are sometimes employed.

It must be realized that with small reflectors built to take a 16-candle power bulb, the insertion of a 21-candle power bulb will not give the proportionate larger amount of light on the road that 21 is to 16, and similarly a 25-candle power bulb in a reflector built for 21-candle power

## Lamps and Battery Sizes

will not give sufficient additional light to warrant its use.

The reflector should be adapted for the particular size bulb to be used, and for this reason there is little use in using large candle power bulbs in small reflectors.

With a commercial reflector having the greatest diameter of 8 inches, a 16-candle power bulb is about all that can be economically focused. With one of 10 inches diameter a 21-candle power bulb should be used, and there is little use in using a bulb larger than 21-candle power unless you have a 12-inch reflector.

We can therefore safely assume that the bulbs to be chosen for the headlights will be of 21-candle power, these being almost universal for cars of over 25-horse power today.

The side lamps and rear lamps are signal lamps only, and for these bulbs of small candle power can be used. Four candle power or 2-candle power bulbs are adequate, and it is customary to use 4-candle power side lights, and 2-candle power rear lights. The amount of current taken by these side and rear lights is so small that there is no objection to using 4-candle power bulbs for all three, or 2-candle power for all three, but the desirability of having a brilliant light at the side, for appearance, has led to the use of 4-candle power bulbs. Frosting these bulbs in the side lights gives a very pleasing appearance.

In addition to the heads, sides and rear, the car will probably be equipped with such current consuming devices as a speedometer light and electric horn, very possibly a cigar lighter, in the tonneau or limousine, and similar lights. None

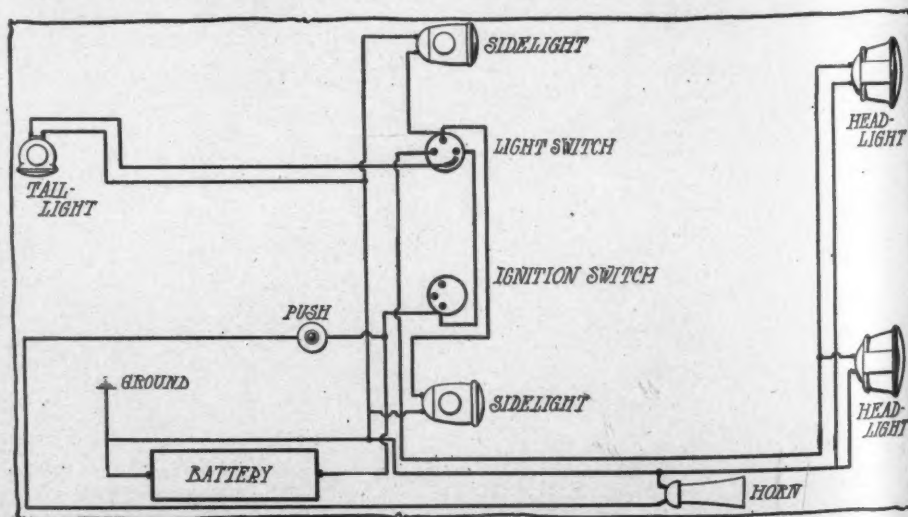
of these lights, however, is used for a very long period of time, and in designing the balance of the system after having decided on the five main lamps it may be safely assumed that the overload capacity of the outfit will take care of these additional loads for a short time.

We can assume, therefore, that the lamp load on an ordinary car should be: two 21-candle power headlights, two 4-candle power side lights and a 2-candle power rear light. The two headlights will take 7 amperes, the two side lights 1.7 ampere, the rear light .6 ampere, making a total lighting load of 9.3 amperes.

If for the sake of convenience in calculation, we allow a rather high figure for wiring loss, we may say that the current drawn from the battery is 10 amperes with the lights all on. Batteries are rated by their ampere-hour capacity, which means the number of hours they can supply a given number of amperes current without recharging. The capacity is the product of the current supplied by the number of hours it can supply that current. For instance an 80 ampere-hour battery can supply our 10-ampere load for approximately 8 hours; it could furnish 5 amperes for 20 hours without recharging.

A battery of 80 ampere-hours capacity would hardly be large enough because it would need to be recharged too often, although many of these are used. If the lamps are as large as those assumed, it is better to install a 120 or 160 ampere-hour battery. The former would carry the full load for 12 hours and the latter for 16 hours.

For the sake of the battery be sure to get a special lighting battery and not an ignition battery as the latter is quite likely to be ruined and will not give as good results.



WIRING CONNECTIONS FOR BATTERY LIGHTING SYSTEM